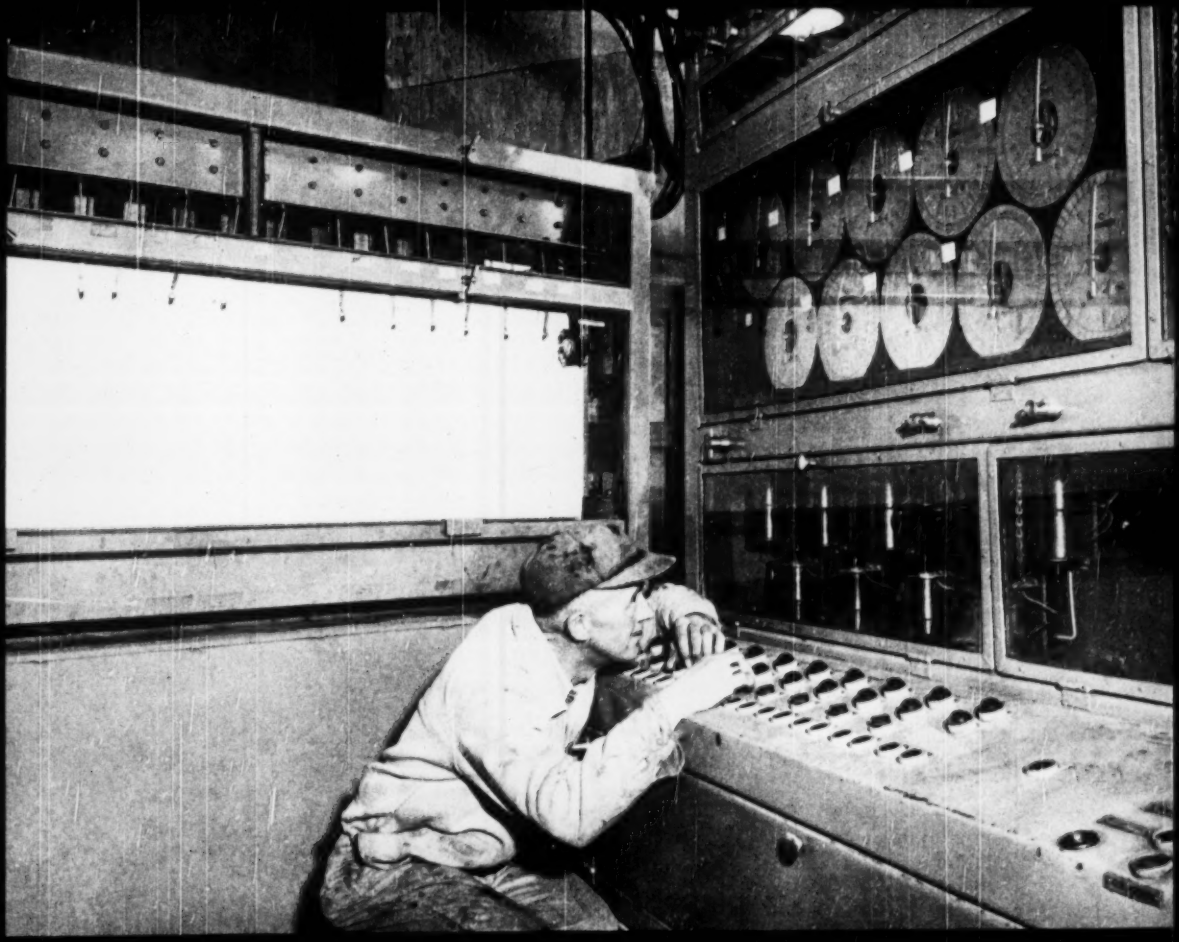
ENGINEERING NEWS-RECORD



A McGRAW-HILL PUBLICATION

There's a Maintenance Threat in all these services...combat it with

BYERS WROUGHT IRON PIPE

If you have any of these piping services in prospect—watch out for corrosive attack! It's always a threat, and failure to use proper safeguards may mean early and costly maintenance.

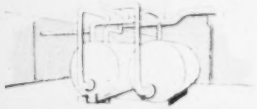
Byers Wrought Iron pipe has made some outstanding records for durability in every one of these applications. We'll be glad to give you specific examples on request.

RADIANT HEATING

Wrought iron is now serving in thousands of installations, of all sizes. The superior durability of the material is demonstrated by its comparative service in skating rinks—where conditions are even more severe.

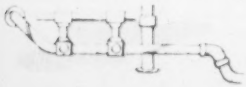
SNOW MELTING

Widely used not only because of its corrosion resistance, but because its mechanical strength protects it from crushing during installation and use.



STEAM RETURN LINES

Condensate is always aggressive. Wrought iron return lines, properly installed, have proven remarkably effective in eliminating excessive repairs and replacements.

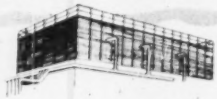


WASTE AND VENT LINES

Corrosive sewage gases quickly gnaw away any vulnerable material. Surveys of old buildings reveal wrought iron still serving after periods of up to 50 years.

CONDENSERS

Users have reported service life of 30—40 and even 50 years from wrought iron condensers. One study of 32 condensers showed wrought iron served over twice as long as low first-cost material.



AIR CONDITIONING

Many services are highly corrosive . . . and replacements are difficult and expensive. Wrought iron has been used to safeguard operations in dozens of large installations.

UNDERGROUND LINES

Whether in trench or tunnel, corrosion is always a hazard to underground lines. Here, again, users have reported wrought iron service of over half a century.

The corrosion resistance of wrought iron comes from its unique composition and structure, which halts and disperses attack. Ask for bulletins on any services in which you are interested.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, San Francisco. Export Division: New York, N. Y.

BYERS

GENUINE WROUGHT IRON

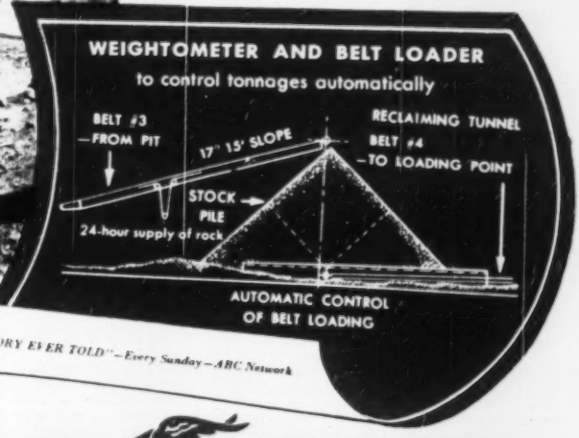
TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

These belts outwork 6 trains!

IN a Virginia quarry, a system of four Goodyear conveyor belts—one of which you see here—carries limestone that six donkey-engined trains used to carry laboriously from quarry to plant. The conveyor system, designed by the G.T.M.—Goodyear Technical Man—is ¾-mile long, instead of the six miles of track the railway system used. In addition to short-line haulage, the belts have larger ton-per-hour capacity, making stock piling at the processing end easier. Constant flow ends spotty loading. Haulage costs are far lower, too.

You can consult the G.T.M. on any materials-handling problem by phoning your nearest Goodyear Industrial Rubber Products Distributor, or writing Goodyear, Akron 16, Ohio.



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ENGINEERING NEWS-RECORD

Volume 144 APRIL 13, 1950 No. 15

WALDO G. BOWMAN
Editor

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Publisher

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THIS SHOVEL HAS STOOD the Rock Test!

Here's a job that would test the metal of any equipment. It's the kind of a place where smoothness of dipper control, ease of operation, accuracy in spotting and crawler maneuverability mean the difference between daily loss and irritation — or profit. Only a real Rock Shovel can handle a job like this! The machine is owned by Frazier-Davis Construction Co. of St. Louis, Mo., and it is working on part of the new water line for New York City — and by the way, Frazier-Davis have bought their 21st Northwest.

CAN YOURS?

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FOR GREATER DIGGING POWER

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For more profit in every on and off-the-road job depend on this dual-purpose General Truck Tire team. The General L.C.M. for most work off-the-road. The General H.C.T. for most work on-the-road.

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Lithographed on stone by Edward A. Wilson

U.S. cast iron PIPE

FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

Take the lid off a busy street in any sizeable city! What will you find? A maze of mains—water, gas, and sewer mains—many of them cast iron mains—some of them in service for generations. Traffic shock, earth settlement, or earth disturbance by other utilities, are withstood by cast iron pipe because of its shock strength, beam strength, and crushing strength. These strength factors, plus inherent resistance to corrosion, result in long life and economy. U. S. Cast Iron Pipe and Fittings, produced under modern quality-controls, are readily available in sizes to meet the normal requirements of any community. **United States Pipe and Foundry Company, General Offices: Burlington, New Jersey. Plants and Sales Offices Throughout U. S. A.**

OF THE THOUSANDS BUILT . . .

9 out of 11 Eucs

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Euclids are job proved . . . they've earned their reputation for staying power, low-cost production, and continuous operation on the toughest jobs. They're built to "take it" . . . designed for long life and dependable performance in mines, quarries and heavy construction.

The world-wide Euclid distributor organization assures fast, efficient service to all owners. Plan now to use long-life, profit making Euclids for your present and future off-the-highway work.

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13 to 25 cu. yds.—20 to 40-ton capacities. Top speeds loaded up to 34.4 m.p.h.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

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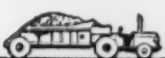


EUCLIDS *Move the Earth*

STANDARD ENGINEER'S REPORT

DATA

LUBRICANT Calol O.H.T. Grease

UNIT Automotive generator bearing

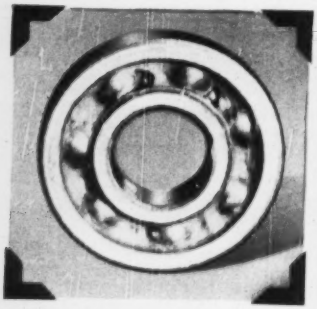
LUBRICATOR Sealed at installation

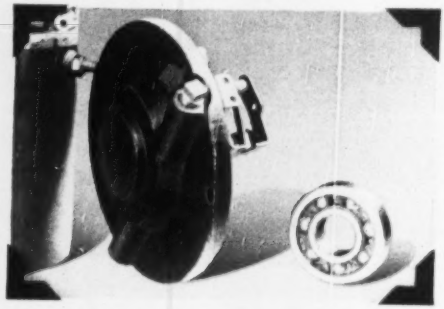
CONDITIONS Heavy-duty diesel truck engine

MILEAGE 70,000

FIRM H. G. Makelim Co., San Francisco–Oakland

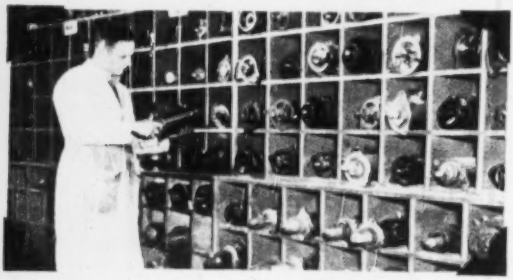
Sealed generator bearing still perfect after 70,000 miles!





ONE APPLICATION OF CALOL O.H.T. GREASE, sealed in the bearings when this diesel-engine generator was assembled by H. G. Makelim Co., prevented any bearing wear in 70,000 miles of heavy-duty truck service. Generator was disassembled at this time only because it needed new brushes, and for general inspection. Note a permanent plug replaces usual grease fitting.

70,000 MILES OF SERVICE did not affect or use up any of the CALOL O.H.T. Grease in the bearings. In special tests, one filling has lubricated bus-generator bearings perfectly for more than 150,000 miles.

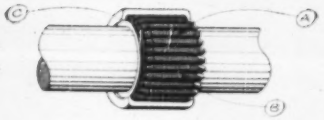


"WITH CALOL O.H.T. GREASE SEALED IN BEARINGS, we recommend installing generators without grease fittings," says Frank Balzarini, H. G. Makelim Co. Foreman. "CALOL O.H.T. eliminates need for greasing between overhauls. And eliminating fittings stops over-greasing—a big cause of wear and trouble."

REMARKS: The H. G. Makelim Magneto Repair Company, San Francisco and Oakland, one of the West's oldest automotive-electrical and carbureter repair-firms, specializes in servicing equipment in the toughest automotive service—truck, bus and car fleets.

Besides generator bearings in this service, CALOL O.H.T. Grease is recommended for all types of plain and anti-friction bearings in service under extremely severe operating conditions.

How CALOL O. H. T. Grease protects bearings in severest operating conditions



Used in any type of bearing under any operating condition, high temperature-low speed, high speeds to 10,000 rpm, temperatures from minus 10° F. to 400° F., CALOL O.H.T. Grease will last indefinitely.

A. Contains special oxidation inhibitor—prevents rusting, corrosion, hardening of grease at any time.

B. Resists high temperatures — eliminates coking and formation of deposits.

C. Provides excellent seal against water... lubricates efficiently in slight moisture.

CALOL

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

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Raymond MAKES 5 TYPES OF CONCRETE PILES

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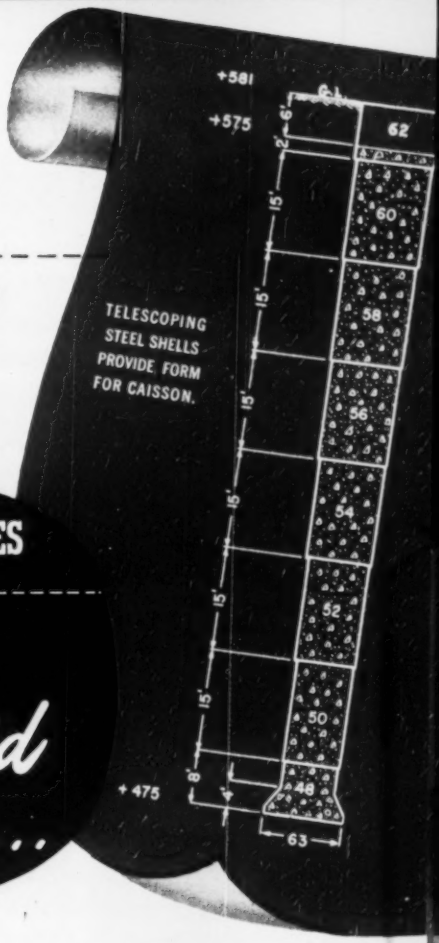
4. COMPOSITE . . . **5. GOW CAISSONS**

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements; also cement mortar lining of pipes by the Centriline Corporation, a Raymond Subsidiary.

At left, excavating starting pit and placing first cylinder. At center, excavating bell at bottom of the steel-lined shaft. At right, the completed caisson.



5. GOW CAISSON PILES

For heavy concentrated loads . . .

Raymond Gow caissons are efficient and economical for supporting heavy concentrated loads under certain soil conditions. The Gow method consists of hand or machine excavation carried on inside of telescoping steel cylinders. Where the caisson rests on hard ground, a bell is usually formed at the bottom to distribute the load over a large area. Where the caisson rests on rock, the bell is usually omitted. After excavation is completed, the steel cylinders are removed as the concrete is poured.

Because heavy equipment is not required and the steel cylinders are re-usable, Gow Caissons are economical in most soils. Your inquiry is cordially invited.

Raymond CONCRETE PILE CO.

140 CEDAR ST., NEW YORK 6, N. Y.

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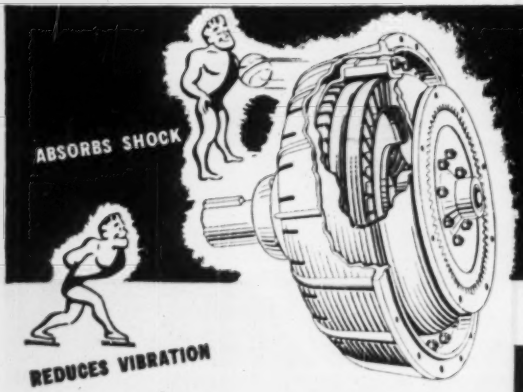

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The Hydraulic Coupling (fluid clutch) is standard equipment on big Lorain-820's in the 2 yd. class. No single feature will pay more profits . . . and add more in production and long life service . . . than this rock-busting, shock-absorbing Lorain drive.

It increases shovel output by improving engine "hang-on" when the digging is tough . . . It prevents engine stalling under *any* digging circumstances . . . It reduces maintenance by acting as a "shock-absorber" so that shocks and stresses are not transferred into turntable mechanism and cables . . . It reduces vibration . . . It's the one big feature you need for rock! Get the Lorain-820 . . . and you've got the best answer to every digging condition . . . from the softest sand to the hardest rock. Want to see one work? Ask your Thew-Lorain Distributor to take you where there's action!

THE THEW SHOVEL CO.
Lorain, Ohio

LORAIN 820's
Beat Them All On Rock

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NEWS BRIEFS

Peru's Still There—The contract held by Knappen, Tippetts, Abbett to oversee construction of a road from Cochabamba to Santa Cruz, in Bolivia (ENR March 30, p 84) does not include the obliteration of Peru and the removal of Ecuador south to replace it on the map. This was suggested by one ENR reader who noted the mistake on the map which accompanied the story. Peru is still there and Ecuador remains where it has always been, artist and editor to the contrary notwithstanding.

One for All—New York's Governor Dewey has vetoed a bill which would have exempted New York City and Buffalo from provisions of a statewide building code now under preparation. Local subdivisions may suspend operation of the code within their borders after it is promulgated, but only then.

More Water for More People—Residents of California's San Bernardino valley have been advised to join the Metropolitan Water District, which supplies 35 southern California cities. The valley's population is expected to grow from 200,000 to 300,000 within a few years.

Wrong Place—A New York airplane made some rain recently—over Boston, of all places. In New York City's watershed, the specially equipped planes of Meteorologist W. E. Howell were grounded by rain. But a TWA airliner from New York left a vapor trail as it flew at 17,000 ft over Boston. Its particles froze and fell, and then it rained. Not buckets, but so you'd notice it.

Pinch Bill—Kentucky's legislature killed a bill pushed by the administration under which out-of-state contractors doing state work would have been paid only 95 percent of their contract price. The remainder would have been held for the state's general fund. Opponents argued that the state hasn't enough contractors to handle the road work the state will offer this year and that out-of-state builders who bid would raise their prices to cover the withholding.

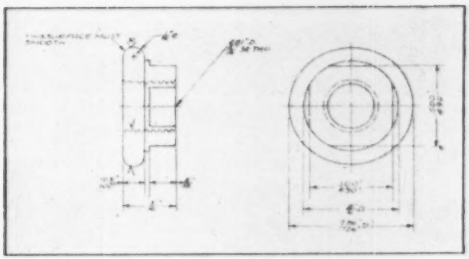
Federal Help Wanted—Arkansas officials want the Army Engineers to pay for a proposed $2,000,000 highway bridge across the lake to be formed by Bull Shoals Dam, on the White River in northern Arkansas.

Pittsburgh of the West, Eh?—Smog

(Continued on page 15)

with STEEL CABLE

— the small extra first cost of test samples pays off in assurance of efficiency and durability of the finished structure.



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Arkwright Tracing Cloths are preferred by foresighted drafting departments *for every drawing worth keeping for future use.* Send for generous samples. Sold by leading drawing material dealers everywhere. Arkwright Finishing Company, Providence, R. I.

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ARKWRIGHT

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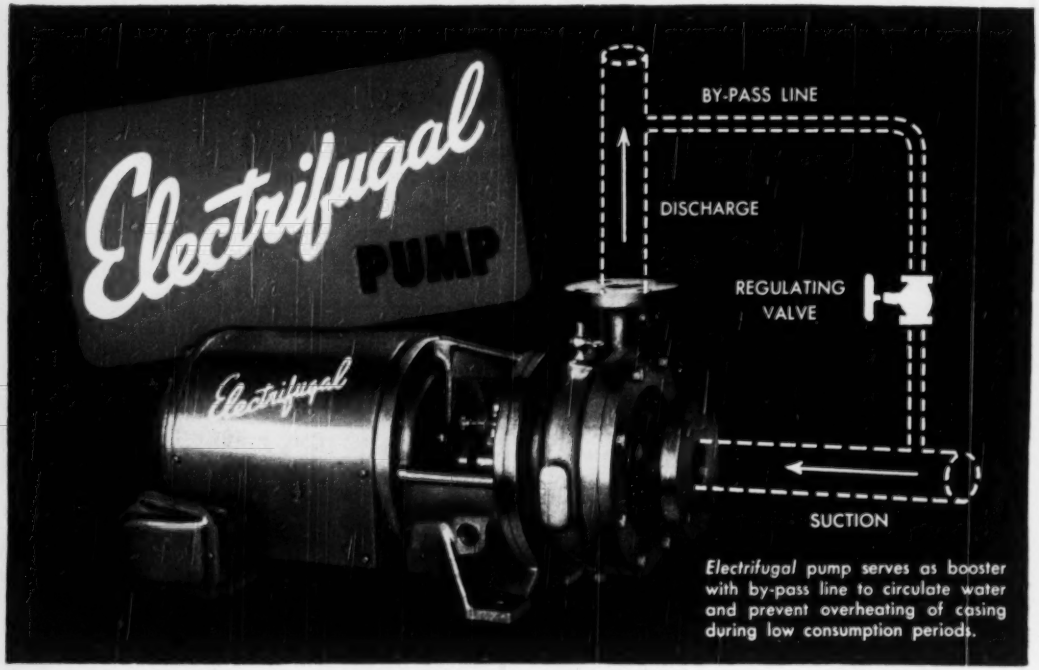
AMERICA'S STANDARD FOR OVER 25 YEARS



Electrifugal pump serves as booster with by-pass line to circulate water and prevent overheating of casing during low consumption periods.

Boost Pressures

ON UNDERSIZE MUNICIPAL PIPE LINES!

- *Electrifugal pumps do the job dependably and inexpensively*
- *You escape heavy construction costs of replacing old lines*
- *Complaints from users in low pressure areas are eliminated*

EXPANDING residential areas often suffer from low water pressures due to undersize pipe lines. Replacement means interrupted service and costly construction. An alternate solution — used by many cities — is to install *Electrifugal* pumps as boosters.

In an outlying district of one city, up to 50 homes are serviced on a two-inch line using the method diagramed above. The *Electrifugal* pump constantly maintained normal pressure during both high and low consumption periods.

Because the cast iron yoke and bracket for mounting are designed as a single piece, separate adapters are eliminated. And because motor and pump are on a single shaft, perfect alignment is always assured and maintenance costs become negligible.

This kind of public works equipment help is available to all size cities — large, medium and small. Your nearest A-C representative will be glad to talk over your equipment problems with you. If you want more information about *Electrifugal* pumps, write today for Bulletin 52B6059E. A-3054

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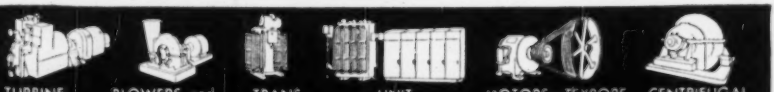
World's Widest Range of Public Works Equipment



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Makes your blades last longer... Because Equalizer Spring automatically cushions blade pressure whether cutting HARD or SOFT materials. Outstanding for blade economy.

PATENTED
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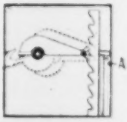
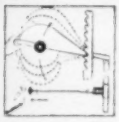


One man easily adjusts Cutting Head to desired height ... Whether cutting 12" or 1" material. Operator's hands merely guide. All weight is supported by rear Connecting Bar.

Adjust-A-Cut Control



Merely pull the knob — and the Cutting Head is free for finger-tip setting at any desired angle. Release the Knob — and Head is locked in the desired position.

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From ONE SPOT at the front of his Clipper Saw the Operator performs every cutting operation and makes every saw adjustment. Never leaves his operating position.

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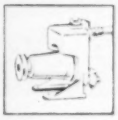

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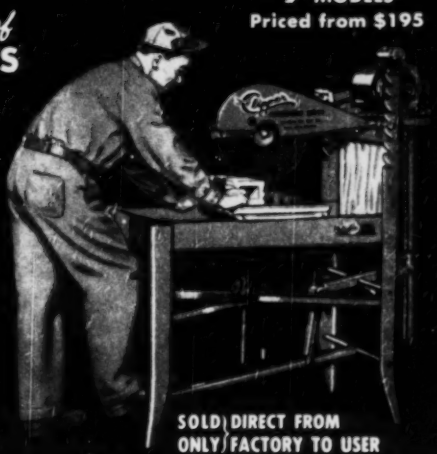
Only Clipper guarantees "To provide the fastest cut... At the lowest cost ...With the greatest ease...Any time ...Any where..." because ONLY Clipper has ALL the vital saw features illustrated and described on this page. The most important of these features that make possible instant portability, complete flexibility, and smooth, sensitive cutting performance are exclusively Clipper.



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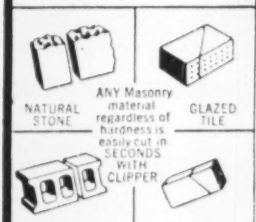
The famous 13-year old Clipper FREE TRIAL Guarantee still enables the user to prove by actual use the amazing money-making efficiency of a Clipper Saw right on the job—SMALL or LARGE—on any masonry material.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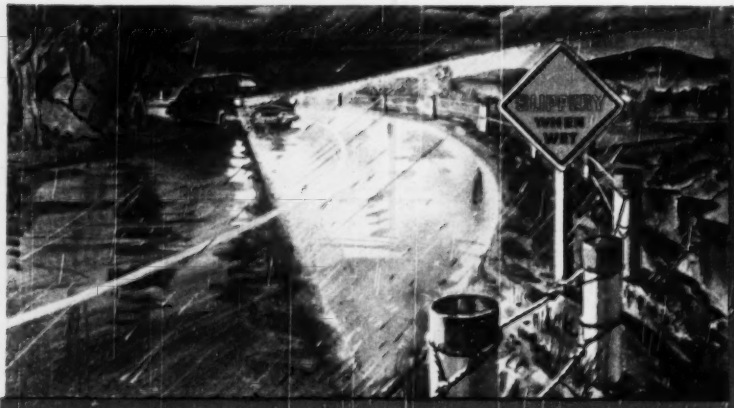

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(Continued from page 11)

is a Los Angeles problem and Los Angeles wants to solve it without state interference. That was the argument used by Los Angeles city and county representatives in killing a bill in the state assembly which called for state funds for smog research.

New Code for Ohio—A 30-man commission has been appointed to rewrite Ohio's building code and to survey housing facilities in the state. S. O. Linzell, state public works director, is chairman.

Reorganization, But—U. S. Chamber of Commerce is opposing transfer of the federal advance public works planning program from General Services Administration to the Housing and Home Finance Agency, as proposed by the President in a reorganization plan submitted recently. USCC says some transfer may be needed, but not one which puts advance planning in an agency with so little concern over economic conditions.

Wanna Bet?—Final cost of the full development of California's Central Valley project will be $3 billion, according to Regional Director Richard S. Boke, of the Reclamation Bureau. Expenditures already made or authorized total $600 million. Its price tag when authorized as a federal project in the mid-'30's: Between $175 and $200 million.

Still More Expansion—The Austin Co. will spend $750,000 to boost by 50 percent the production capacity of its steel fabricating division in the Cleveland area. There'll be a full mechanized shop for quantity production of structural units up to 100 ft in length. AC welding equipment will be installed throughout the new shop.

THE COVER

With the practised eye of a housewife who knows the importance of exact proportioning of ingredients, Vern Nichols, plant superintendent, makes final adjustments on a huge control panel that will handle mixing of concrete for Hungry Horse Dam.

Pouring of this year's quota of the 3,000,000 cu yd of concrete that will go into the 564-ft-high Montana structure was to start early this month.

The control board, which incorporates electronic relays for accurate measurements, exactly measures the weight of sand, water, gravel, cement, and pozzolan in each batch of concrete, making a permanent record with pens on the large roll at left. (Bureau of Reclamation photo).

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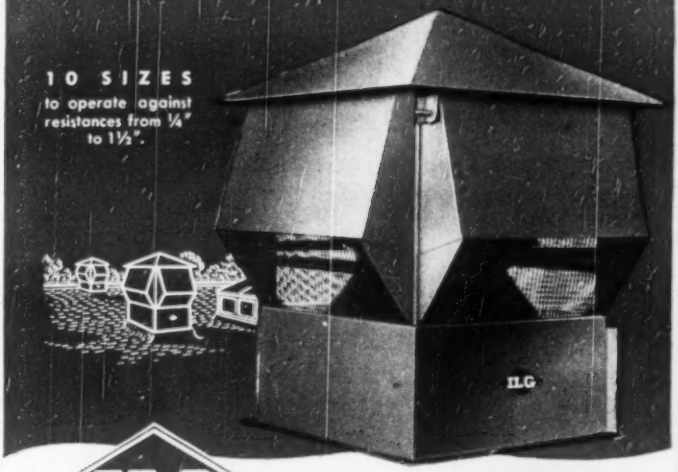
Power Roof Ventilator
(DIRECT-DRIVE CENTRIFUGAL FAN TYPE)

10 SIZES
to operate against resistances from ¼" to 1½".



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"ANTI-FOULING" OIL made by the Remarkable new "HEART-CUT" PROCESS

This new oil—the best known to science... gives you a cleaner engine... more economy ...minimum carbon residue.

It's here now! The remarkable motor oil from the giant new $42,000,000 lubricating oil plant at Lake Charles, La. The plant that's been the big talk of the oil industry for months.

New Premium Koolmotor is made by the unique "Heart-Cut" Process which retains only the choicest part of the finest crudes. *It's so superior that in recent engine tests it outscored nine other major premium motor oils.* No wonder Premium Koolmotor is better in every way! Cleans better, seals better, cools better and fights acid, sludge and corrosion far more effectively. Switch to this remarkable new oil today.

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CITIES SERVICE

THE CONSTRUCTION WEEK

BRIGHT SPOT FOR ROADS—It's no secret that the U. S. is in trouble on roadbuilding—backlogs in excess of available funds, maintenance needs outstripping revenues, vehicles overloading effective road capacities—but there is at least one bright spot. North Carolina has sold $75,000,000 worth of rural road bonds at an interest rate of 1.5235 percent—and you couldn't ask for cheaper money than that. By comparison, money was a lot more expensive when states were in a somewhat similar fix 30 years ago: North Carolina will finish amortizing (in 1953) an issue sold in the 20's at slightly more than 5 percent.

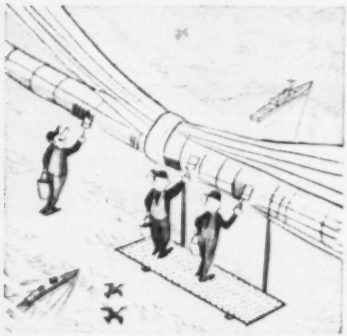
NLRB STAYS OUT—The National Labor Relations Board made it clear again that it won't use Taft-Hartley in disputes involving local construction—even when a union engages in a secondary boycott or seeks to enforce illegal closed-shop conditions. In its latest decision, the board dismissed charges that the Denver Building and Construction Trades Council picketed construction jobs of B. W. Fellers, Inc., (a local residence-construction firm) in an attempt to force the contractor to fire non-union workers and hire union men. The picketing, it was charged, induced subcontractors not to perform work for Fellers. Refusing to assert jurisdiction, the board cited two previous cases in which, in effect, it had ruled that interruption of local construction by a labor dispute would have only a remote effect on commerce.

DOLLARS COME HOME—Taking advantage of a new—and not widely publicized—revision of Bank of England rules and regulations (issued Jan. 10, 1950) the Euclid Road Machinery Co. will establish a wholly-owned subsidiary (Euclid, Great Britain, Ltd.) and build a factory for production of heavy earthmoving machinery somewhere near Glasgow, Scotland. Under the new rules, a wholly owned, out-of-England subsidiary—if its entry is approved into England—can repatriate the investment and earnings in dollars. Under previous arrangements, the U. S. company in Great Britain under a license agreement must pack up and go home at the expiration of the license—leaving the British with all the knowledge and markets. But Euclid, which is putting up all the money for the new plant, will get all the profits in dollars.

THERE'S NO BUSINESS LIKE SHOW BUSINESS—Surveyors have finally left the company of dancers, chorus girls and sports instructors—at least in so far as the U. S. Bureau of the Census is concerned. The Bureau has announced that it now considers surveyors as "professional, technical and kindred workers" (along with engineers, architects, dentists, physicians, religious workers). Previously, Census thought of surveyors as "semi-professionals." Credit for the change goes to the American Congress on Surveying and Mapping, which has carried on a campaign to get away from the dancers for some years.

PUBLIC AND PRIVATE POWER—Improved prospects for non-federal hydroelectric developments (ENR March 30, p 13) displease the Interior Department. It wants the Federal Power Commission to re-open hearings on a license application by Virginia Electric & Power Co. for development rights at the Roanoke Rapids site on the Roanoke River at the Virginia-North Carolina border. The site is downstream from Buggs Island Dam, being built by the Army. Two reasons for Interior's vigorous insistence that the Army also get the Roanoke Rapids site: (1) Interior markets energy developed at Army dams; (2) Interior, with the Corps of Engineers one of the two major water development builders in the land, wants no decisions of record which would tend to re-open navigable streams to non-federal development, as the examiner's decision would. One of Interior's arguments for re-opening the Roanoke Rapids hearing is confusing enough. It says a private developer there would be subject to an annual charge of $1,762,000 for benefits it would derive from the Army's Buggs Island Dam upstream. With that charge included, Interior adds, Roanoke Rapids energy would be more expensive than steam-generated energy. What's confusing is the implication that the same benefits wouldn't be charged against Interior if it marketed Roanoke Rapids power, instead of VEPCO.

WORM TURNS DEPT.—Reclamation Commissioner Michael Strauss, who's been berated Congressionally in his day for overspending appropriations so as to force deficiency funds, finds a quite different problem reflected by the Bureau's February progress report. It showed that expenditures, both for construction and for investigation on Missouri Basin projects, aren't up to schedule. With two-thirds of the fiscal year elapsed, only 48 percent of the funds for construction and investigation had been expended. And it doesn't appear likely that the deficit would be made up by the end of the fiscal year next June 30. To do so would mean boosting monthly average spending from $7,800,000 to $16,600,000.



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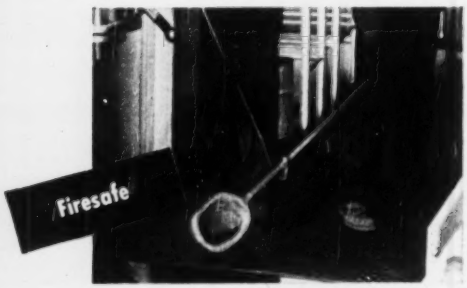

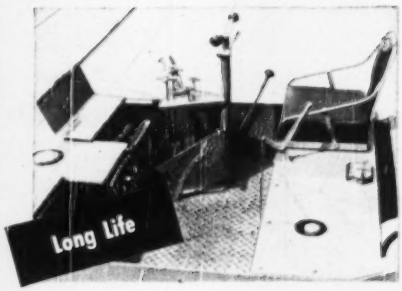

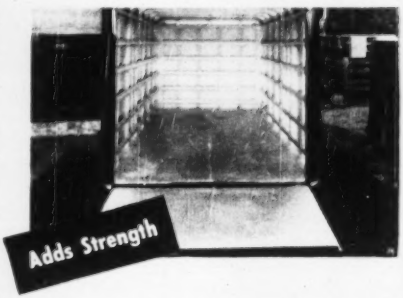

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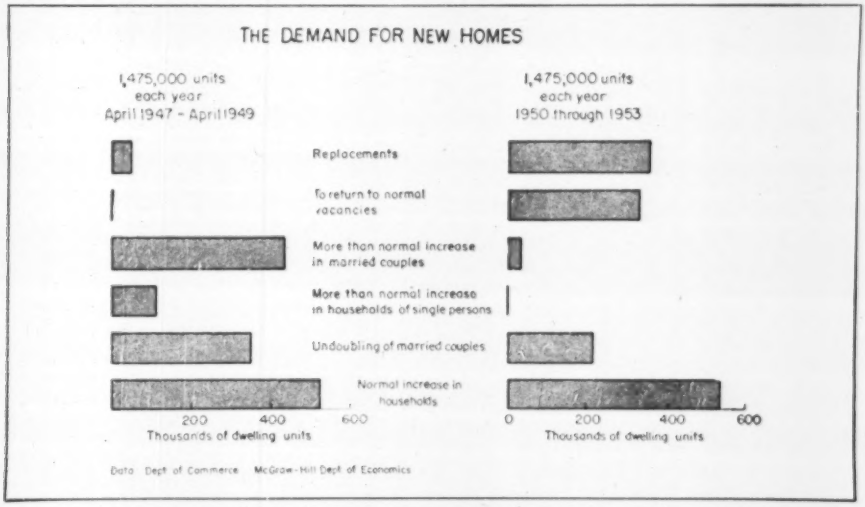
CONSTRUCTION TRENDS



WHAT'S AHEAD FOR HOMEBUILDERS?

The housing boom has been picking up steam ever since the end of the war. Currently, homebuilders are going at a pace of well over a million new homes a year. How long can they keep it up?

The U. S. Department of Commerce has come up with the most-solidly constructed outlook yet put together. S. Morris Livingston, top-flight economist for the department, has made a careful study of the demand for new homes. He believes homebuilding can run on in high gear for three years more—but in a very different kind of market. Here's how:

In the two years between April 1947 and April 1949, builders turned out 1,475,000 new housing units each year. This includes about 875,000 new nonfarm homes (reported by the Bureau of Labor Statistics) and about 200,000 new farm homes. In addition, about 400,000 other units—trailers, temporary homes, apartments converted from old buildings—came in each year.

So far, there have been enough customers to take up all the new homes. There was a net gain of about 984,000 each year in the number of families in the country. As the chart above shows, that was about 434,000 above the normal rate expected by the Bureau of the Census from its studies of past marriage and divorce rates. Prosperity made it possible for many couples to marry younger.

In addition, each year about 353,000 married couples that had been living with other people, usually their parents, got homes of their own. This "undoubling" was paralleled by a movement of single persons who wanted their own homes. They boosted the demand for new homes by about 113,000 units a year. Finally, about 50,000 new homes were needed each year to replace those destroyed by fire or otherwise.

From these figures, it seems the boom can't last. Of the almost 1.5 million new homes built each year, more than one half went to fill unusual demands.

But Livingston believes there are enough other kinds of demands to keep homebuilding at a high level.

Looking ahead, he sees a need in 1950 through 1952 for about 588,000 new homes each year to take care of new families that will be formed. The U. S. marriage rate is still high—slightly above "normal," although it is well down from its postwar peak. Also, there is some "backlog" demand. Something like 217,000 married couples now living with other families are expected to want places of their own each year.

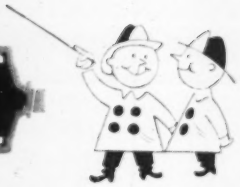
In addition, the country can build 333,000 homes a year for three years before vacancy rates get back to normal. Where about 5% of all homes were normally vacant before the war, now only 2 to 3% are.

All this adds up to a demand for about 1.1 million new homes a year.

How to close the gap and keep today's high level? Livingston points to the replacement market. If costs can be brought down enough, and if the government swings into a large-scale slum clearance program, it may be possible by 1952 to build 357,000 new homes each year to replace substandard units now occupied.

All this merely highlights what will be a major development in construction. Another Trend in the next few weeks will explore what will be involved.

EASE OF MAINTENANCE



Simple, sound construction assures long, troublefree service. Only the operating thread requires lubrication—once a year should be enough.

MATHEWS HYDRANTS

MATHEWS MODERNIZED HYDRANTS SET THE PACE: All working parts contained in replaceable barrel • Stuffing box cast integral with nozzle section • Head can be turned 360° • Replaceable head • Nozzle sections easily changed • Nozzle levels raised or lowered without excavating • Protection case of "Sand-Spun" cast iron for extra strength, toughness, elasticity • A modern barrel makes an old Mathews as good as new.

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Safety Factor for Prestressing

A PAMPHLET newly published by the Portland Cement Association presents a design procedure for prestressed concrete by applying the method to a particular structure. It is a useful addition to the literature of a new and important science to American engineers. However, in the absence of recognized American design standards, it was necessary in the calculations to make assumptions based on European practice. The most important of these affect the safety factor, which in turn determines allowable unit stresses and thus the whole economy of prestressing. Some thought-provoking questions may properly be raised about them.

1. Is it necessary to assume no tension in the concrete for design conditions?

If this assumption is made for dead load plus live load, then the beam is provided with a reserve against cracking under excessive loading. The same assumption, however, may be ultra-conservative from the standpoint of maximum economy when applied to the top of a simple beam under initial prestress, as in the pamphlet. Obviously, the stress in the top fiber may safely equal the tensile strength of the concrete. But it also might even exceed this tensile strength to the extent of causing hairline cracks since, in most cases, the cracks would do no harm or would disappear entirely as soon as dead load is applied, placing the top fiber in compression.

2. How should the allowable initial steel stress be determined?

In the pamphlet, the initial stress is taken as 60% of the tensile strength of steel wire of certain characteristics. But, this percentage might be ultra-conservative or unsafe for another type of wire.

Actually, according to wire specialists, other properties of the wire than ultimate tensile strength may be more useful as a measure of the allowable initial stress— for example, elastic limit (largest stress without permanent set) and creep limit (stress above which strains increase under long-time load without increase of load). The importance of these factors rests on the fact that any permanent set of the steel causes a loss of prestress. One American authority suggests a specification and test requirement of 0.7% elongation at a minimum of 180,000 psi for bright wire and of 175,000 psi for galvanized wire to identify the grade of wire best suited to prestressed concrete.

3. What is the safety factor?

It is impossible to relate safety factor to stress, as is done for ordinary reinforced concrete since the stresses in a prestressed concrete beam are not proportional to the load. The question, What is a safety factor? has meaning only with respect to the loading; it really asks, How many times can the load be increased until the beam reaches its yield point (or fails)? It is not logical or economical, for example, to apply an arbitrary safety factor to the limiting stress in the steel to obtain working stress, as for structural steel. The initial steel stress, which may not be much smaller than the largest stress the steel will be called upon to sustain, can be safely made nearly equal to the creep limit (for wire meeting the previous specification), and yet the safety factor may be larger than that customarily used for other materials.

Now, with prestressed concrete just appearing on the American scene, is the time to examine such fundamental questions as these, and debate the answers. Much study and testing is needed to determine and define the true limit loads for prestressed concrete. After that, logical, economical working stresses and safety factors can be confidently chosen.

Rat Control Can Save Money

CIVIL ENGINEERS, architects and public works officials apparently do not know that we have a very real rat problem. At least, too little is done about it considering the fact that rat damage in the U. S. is conservatively estimated at more than $1 billion a year.

Rats are the principal carrier of Bubonic plague and other debilitating diseases. They are responsible for an untold number of food infections. They make vast quantities of food unfit for consumption. They start numerous costly fires by gnawing electrical insulation, and they damage buildings and furniture in making passages and getting nesting materials. The whole sordid story, plus what can be done about it, was told in an article in last week's issue.

A sound and economically feasible attack on rats is needed. Its aims should be to cut down the dollar loss to the lowest posible level, and to minimize the various threats to public health.

Here are some of the most important actions that will have to be taken: Responsibility for municipal rat control must be assigned to a particular agency, with effective liason to other departments. Sufficient funds for its support must be set aside. Health-department specialists must be given authority to direct rat clean-up and continuing control. Ordinances must be adopted to compel negligent owners to rat-stop old buildings and warehouses. A program of public education as to the benefits to be gained from rat control must be carried out. And architects and engineers must be stimulated to consider rat-proofing for new buildings.

There's a job to be done on the rat.

On new section of N.Y. Taconic State Parkway—

Greater Safety... Greater Durability

with WHITE CONCRETE REFLECTING CURB

made with ATLAS WHITE DURAPLASTIC*

BY DAY, the corrugated surface of this White Concrete Reflecting Curb forms a concrete ribbon of white that contrasts with pavement gray. It clearly outlines the road ahead.

ON DRY NIGHTS, the saw-tooth faces of the curb catch headlight rays and reflect them back to the driver, making the way ahead more visible . . . and driving safer.

ON WET NIGHTS, when good visibility is needed most, the wet faces of the curb become even more reflective, even more mirror-like, safely guide drivers along the highway.

PHOTOS of Atlas White Concrete Reflecting Curb installed on new section of Taconic State Parkway, East of Poughkeepsie, N. Y. Contractor: John Arborio, Inc., Poughkeepsie. Curb installed by Provenzano and Mozelli, Hewlett, N. Y.

* * * *

Not only greater safety, but greater durability, at no extra cost. For, when White Concrete Reflecting Curb is made with Atlas *White* Duraplastic, it has all the advantages created in concrete by this air-entraining cement—increased plasticity, easy placement, minimized segregation and bleeding, higher resistance to effects of freezing-thawing weather and scaling action of de-icing salts. And Atlas White Duraplastic costs no more than regular White Cement.

Send for free information to Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

* "Duraplastic" is the registered trade mark of the air entraining portland cement manufactured by Universal Atlas Cement Company.

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For White Concrete Reflecting Curb

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

ENGINEERING NEWS-RECORD

APRIL 13, 1950 VOL. 144 NO. 15

Army-Reclamation merger held to be unlikely this year

Some form of unified control over competitive construction by these agencies may come, Washington thinks, but there are too many obstacles at present

Vincent B. Smith
Washington Staff

Washington opinion leaned to the belief this week that President Truman would not—during this Congress—submit a plan to merge Army Engineer civil functions with the Bureau of Reclamation.

On at least two counts, the chances appeared strong that he would postpone his decision on how best to coordinate federal river development.

With strong dissent by a few of its dozen members, the Hoover Commission recommended a year ago that Army civil functions be transferred to the Interior Department and combined there with the department's present reclamation and power activities in a new water development and use service. A controlling feature in this reorganization plan stipulated that all project plans of the water service and three other services in the department be submitted by the Secretary of Interior to a Board of Impartial Analysis in the President's Office for final review and recommendation to the chief executive (ENR March 24, 1949).

• **One job—one agency**—This scheme offered as its major virtue the promise that it would centralize management control over all federal development of water, mineral and public land resources. By funneling all project proposals through an executive board in the White House offices, the Hoover Commission felt that uncoordinated federal development of the nation's resources could be brought under reasonable, unified control.

Much of this resources-development authority already is centered in the executive branch. But major parts of it—particularly the Army's flood control and rivers and harbors activities—accept Presidential directives only on a basis of prudence and courtesy, to be disregarded at the will of Congress. Flood control and navigation activities of the Corps of Engineers are carried on by orders from Congress.

Congress decides yearly as to what works the Army Engineers shall build and what money shall be spent on the individual projects. When voters want a new project, they appeal directly to their congressmen. The system allows much log rolling at the Capitol. Many congressmen naturally would hate to lose the privilege.

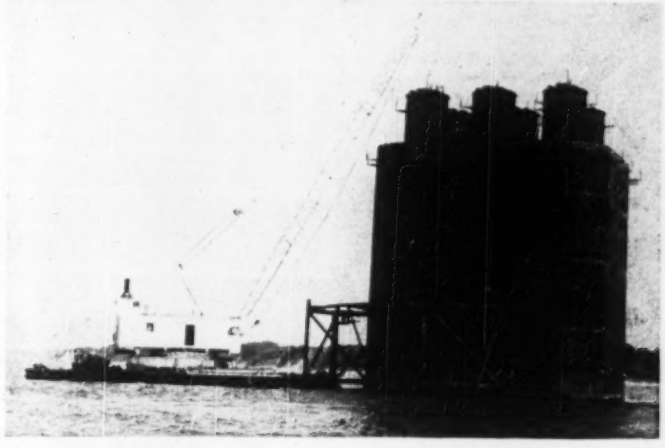
• **Less autonomy for USBR**—Federal projects built by other executive agencies—reclamation works and post offices, for example—are similarly under control of Congress when it comes to authorizing future appropriations and finally voting money either for site studies or construction. But the executive branch has the legal responsibility to determine what plans for future work—at all stages—shall go to Congress.

Congress frequently kills such proposals, or parts of them. In addition, it can and often does instruct agencies other than the Army to study and report on potential projects. Finally, it can override the President by including in authorization and appropriation bills projects he has disapproved. But this process is much more tedious and less inviting than the direct approach that lies open to flood control and navigation projects.

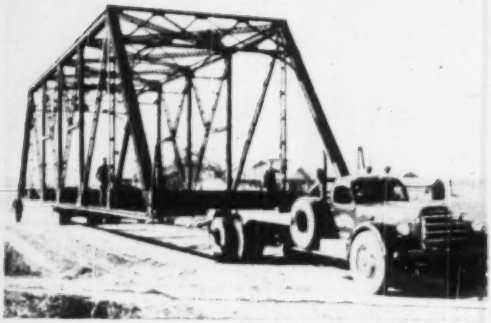
Outspoken critics of the Hoover Commission's plan—to put federal water resources activities in one agency under executive control—admit the scheme is sound and logical in theory. They attack it on the practical side: Consolidation of Army civil functions with Reclamation in the Interior Department, they contend, would cost the nation more than it would gain.

• **Truman isn't sold**—Strong arguments are offered to support that view.

(*Continued on page 24*)



TALLEST CAISSON MAKES PORT—Firmly anchored, ready for sinking, the first of six caissons for the York River Bridge at Yorktown, Va., floats in a novel spud tower dock after being towed 40 miles from the plant of the Newport News Shipbuilding and Drydock Co., March 24. Drawing 32 ft of water and extending 78 ft above, the caisson is probably the tallest ever floated into place. The 80-ft depth of water in which it will be sunk is also a near record, exceeded, as far as is known, only by one of the piers on the Bay Bridge at San Francisco. The caisson will be sunk to EL-141 ft by the Massman Construction Co., and the Kansas City Bridge Co., substructure contractors for the $9,000,000 structure. The consulting engineers for the Virginia State Highway Department on the work are Parsons, Brinckerhoff, Hall and MacDonald.



OLD BRIDGE, NEW SITE—New bridge to replace one on the North Canadian River, Oklahoma, which was washed out by floods, was donated to the county by the state, provided the county would move this 34-ton span 17 miles to where it was needed. At right, it's being inched into position with the aid of an 85-ft gin pole. (Acme Photos)

Merger seen unlikely

(Continued from page 23)

President Truman is reported on good authority not yet convinced that the merger would be an unmixed benefit. More than a month ago, he received from the Budget Bureau a confidential report on the proposed reorganization plan. That report was purely objective. It merely laid out the pros and cons, made no recommendations.

Some facts supporting the present arrangement packed considerable weight. One part of the analysis emphasized the advantages of competition between two agencies doing similar work—an argument little used by opponents of the Hoover Commission plan.

Doubts as to the wisdom of consolidation would be almost the only decisive reason for Presidential delay in submitting a merger plan. Political strategy could be an important consideration, but not even his bitterest enemies disparage the President's courage—or bull-headedness—in moving once his mind is made up.

• **Analysis group possible**—Other schemes are possible by which Army civil functions could be integrated—more closely than at present—with resources planning of the executive branch. The Board of Impartial Analysis is the core of the Hoover Commission proposal for coordinating all federal development projects under the President. Both the President and Congress might be more inclined to favor a setup that would preserve the two competing agencies but vest final control over all their planning in such a panel. The real obstacle: Congress would in large measure continue to resist any thwarting of its direct access to the Corps of Engineers, by-passing the executive branch.

Strategy might be important to the President for a second reason. Staunch friends of the Corps of Engineers are powerful in Congress. Sen. John L. McClellan, of Arkansas, president of the National Rivers and Harbors Congress, for example, is chairman of the Committee on Expenditures in the Executive Department. This is the committee that handles any reorganization plan to which Senate objection is raised within the 60-day time limit after the President sends the proposal to Congress.

• **McClellan doesn't like it**—Senator McClellan served on the Hoover Commission—and while there, joined in the trenchant minority dissent attacking the plan to shift Army civil functions to Interior. He and most members of Congress want to see as many as possible of the Hoover Commission proposals enacted. Quite recently, he warned the President and Budget Director Frank Pace that he will fight a civil functions transfer plan to his last breath. Sending that proposal to Congress, he told them, might precipitate a battle that would wreck the chances of many other reorganization plans.

President Truman sent to Congress last month 21 plans for reorganization (ENR March 23, p 75). Congress probably will acquiesce in all of them except possibly that which would abolish the general counsel of the National Labor Relations Board and put all his functions under the board itself. In his message accompanying the 21 plans, the President said he expects to transmit additional plans this session.

• **Authority issue involved**—A third factor that could influence the President's thinking is his well-known and frequently stated stand in favor of basin and regional authorities—for the Columbia and the Missouri Rivers, the northeast, and even the whole north central area from the Missouri to the Ohio. Authorities might be harder to sell Congress if all resources development activities were already centered in one executive department.

Of one thing you can be sure. No part of the delay in presenting the plan to Congress will be attributable to the study that the President's Water Resources Policy Commission now is making. In his Jan. 3 letter to the chairman of the new board, created by executive order that day, Mr. Truman explicitly stated that the Hoover Commission had taken care of the organization problems and that the water panel was to confine itself to questions of policy.

Los Angeles installation seen easing smog problem

The General Petroleum Corp., Los Angeles, has put in operation a $600,000 hydrogen sulphide recovery plant at its Torrance refinery. Refinery smoke will be treated by the unit, and experts estimate 50 tons of sulphur daily will be prevented from escaping into the atmosphere and forming sulphur dioxide.

Hydrogen sulphide will be piped 8½ mi. to the Hancock Chemical Co. plant in Wilmington, where another $500,000 has been spent to handle General Petroleum's output.

Completion of the double pipe line between Hancock and General culminated several months of planning and engineering. The line will carry about 650,000 gal of diethanolamine solution on a 17-mi round trip. Each day about 125,000 lb of hydrogen sulphide will be absorbed by the diethanolamine and removed at the Hancock Chemical Co. plant.

Social security expansion measure being drawn by Senate committee

Conservatives control group working on bill passed by House to broaden benefits—Business testimony surprising

The kind of social security law you are going to live with for quite a while is being put together in the Senate Finance Committee.

How many more workers and self-employed will be covered? How much will benefits amount to? What will be the tax rate?

Those are the big questions worrying senators. It will be another three weeks before the final votes are cast in the committee, and a bill is presented.

There are some other knotty problems confronting the committee, such as recasting the present insurance system into a pay-as-you-go program.

But these will go to a study group for action after the election. Time is running out and the Administration knows it has to get social security extension through this spring if any kind of record is to be made on the Fair Deal.

• **Everybody had a plan**—The committee, headed by Sen. Walter George, went into closed-door session this week after listening for 10 weeks to scores of witnesses explore every phase of social security. Out of that welter of words came these recommendations:

1. Extend coverage to include every worker in the county.

2. Increase benefits to make pensions catch up with living costs.

3. Keep government old age pensions as a floor, a minimum on which the people may, voluntarily, add to their security by private means.

Testimony this year must be read in the light of a development that was virtually unknown when social security was first enacted in 1935. That's the union-management pension. These plans materially affect thinking about social security.

In most cases, management is footing the bill on union pensions while continuing to share the cost of government pensions. Furthermore, most union pension formulas are geared to supplement social security at a given ceiling of, say, $100 a month.

So a lot of corporations have been figuring that by increasing federal benefits, and by taxing wages up to a higher ceiling, management's personal liability under a union pension system would be lessened.

• **Didn't materialize**—However, there was no testimony from management along that line. Social Security Administrator Arthur Altmeyer recommended doubling of present pension payments and applying the payroll tax to $4,800 of a worker's income. The unions went along with that, as well as a progressive payroll tax jumping to 2 per cent in 1951, hitting a top of 3½ percent in 1970.

AFL President William Green warned that unless Congress writes a liberal law, his unions would join in the fight for pension clauses in their bargaining contracts.

But Ira E. Mosher, of the National Association of Manufacturers, said that old-age payments should be kept to the minimum that the economy can support. The tax should not be raised beyond the present 1½ percent, he said, nor should the taxable ceiling be raised above $3,000.

Insurance company spokesmen sided with NAM. Their argument: To make social security the main reliance the people have for old-age comfort—as Truman urges—would cut deeply into legitimate private enterprise insurance.

• **Committee's conservative**—The Finance Committee is inclined to go along with this kind of advice from business. If anything, committee leaders—George, Taft, Millikin—are approaching the problem more cautiously even than industry.

No one of these senators wants to write anything revolutionary into the new law. They are having a big say in the committee, and the bill being written won't be far different from their views.

These, then, are the dimensions of the legislation the Senate will vote on, and which will be presented to the President:

• **Coverage**—The bill the House voted last fall added about 11,000,000 persons to the present social security rolls that total 35,000,000. Covered in the House measure were state and municipal workers, self-employed except professionals such as doctors and lawyers.

The Senate bill will add a formula for bringing in additional self-employed, recommend some kind of experiment on domestics and farmers. In response to opposition testimony from representatives of state and municipal employes, the Senate bill will provide a liberal option clause for such groups.

Estimates are that finally, Congress will cover in around 15,000,000 additional people.

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NEW HIGHWAY BRIDGE—Cellular steel sheetpile cofferdams were used by the Dravo Corp., Pittsburgh, in building the two main river piers for a 2,000-ft, four-lane highway bridge across the Monongahela River at Belle Vernon, Pa. The bridge is a key structure on a road to connect the Pennsylvania Turnpike, at New Stanton, with Route 40, at Washington, Pa., enabling Turnpike-Ohio traffic to bypass Pittsburgh. Underwater portion of each main river pier has concrete shafts embedded in rock 70 ft below water level. Concrete distribution block 89x24x38 ft rests on the shafts and supports concrete columns on which the structural framework will rest. Normal channel clearance will be 431x75 ft.

(Continued from page 25)

• **Benefits**—Today's average pension, about $25 a month, will be doubled, at least. This means the top benefits will be raised from $56 a month to around $85-90.

• **Taxes**—The Senate bill will freeze the tax at 1½ percent for the present. A higher tax won't be voted until the whole problem of financing the old-age program year-by-year is decided. Then a formula combining employer-employee contributions with outlays from general revenue will be worked out.

• **Ceiling**—The Senate committee is likely to freeze the $3,000 ceiling for payroll levies. However, in the face of Mr. Truman's request for a $4,800 ceiling, plus the recommendation of $4,200 made by the Senate Committee's Advisory Council two years ago, the final figure agreed upon probably will be $3,600.

• **Public Assistance**—There had been hope of trimming federal payments to states for direct relief (which have been running about $1.7 billion yearly in addition to social security benefits). But the pressure on Congress is so great that the House provision—for an extra $5 per month per recipient—probably will be added to existing payments.

• **Disability**—Last year, President Truman asked for temporary disability compensation. This year, he asked only permanent disability benefits. Neither will pass.

Water supply project planned at Vancouver

Erection of a dam on the Capilano River at a cost of $8,000,000 will be started this year by the Greater Vancouver and District Water Board at Vancouver, B. C. The board has agreed to open negotiations with Ottawa on financing. It is hoped federal aid will be given.

The project would boost Capilano's water capacity from its present 53 mgd to about 220 mgd.

Construction of the dam will mean a gradual rise toward a 25 per cent increase in water rates for districts and cities within the water district.

"I don't want to take the responsibility of going any further than the end of this year without doing something about the dam," declared Dr. I. A. Cleveland, chief commissioner.

He urged its construction as "an additional insurance" against a possible water shortage. Alderman George Miller pointed out that the project, which would create a lake on the upper reaches of the Capilano, had been put off for 10 or 12 years.

WELDED FRAME COMPLETED—Framework of this 21-story addition to the Fawcett Building, at 44th St. and the Avenue of the Americas, New York City, was welded to minimize noise. The structure will add 60,000 sq ft of office space, first major office building operation on the avenue since completion of the Rockefeller Center group early in the 1930's. Schumm & Lichtenstein were architects, with Kahn & Jacobs architects for the lobby, store fronts and first three floors.

California House OK's $1 billion works program

The California State Assembly has passed a bill endorsing a $1 billion public works construction program.

It passed by the senate and signed by the governor, the bill would be placed before the voters at the November general election.

Although the measure passed the assembly by a vote of 44 to 27, the general feeling in Sacramento is that it will not be approved by the state senate.

Ratification at an election would give the legislature power to issue bonds up to $1 billion for construction of all types of public works or for the loan of funds to cities, counties and other local public agencies for construction purposes.

Funds derived from the sale or lease of projects constructed under the program would be used in paying off the bond issue over 45 years, a longer-than-usual bond-issue term.

Assemblyman Sam Yorty, sponsor, said the state should plan now to relieve "any aggravated unemployment situation instead of waiting until the crisis is upon us."

Principal opposition to the bill was expressed by Assemblyman Marvin Sherwin, of Alameda County, who charged the proposal was a "gigantic Christmas tree, log rolling project."

Sherwin said the scheme chiefly would benefit the heavy construction industry and would affect only about 5% of the total employment in the state.

Suggestions sought on national water policy

Engineers Joint Council establishes task committees, solicits suggestions from members of the engineering profession

Task committees, set up Engineers Joint Council to develop the framework for a national water policy, have sent out an appeal to the engineering profession for suggestions. This plan, announced in February (ENR Feb. 2, p 29), is now definite enough to give the names and addresses of the committee chairman to whom information should be sent. Inasmuch as a basic purpose of the reports is to serve as guidance for the President's Temporary Water Resources Commission, they must be completed by June 1, if they are to exert maximum influence.

The EJC coordinating committee, to which the task committees will report, is headed by Abel Wolman, of Johns Hopkins University. It is a committee of the EJC's Water Policy Panel, of which W. W. Horner, consulting engineer of St. Louis, is chairman. The eight task committees, appointed jointly by Wolman and Horner, and their respective chairman are:

Committee 1—"Domestic and Industrial Water Supply Pollution," L. R. Howson, consulting engineer, Chicago, chairman.

Committee 2—"Flood Control and Water Flow Retardation," J. A. Short, Missouri Department of Resources and Development, Jefferson City, Mo.

Committee 3—"Navigation and Water Transportation," Cary H. Brown, Eastman Kodak Co., Rochester, N. Y.

Committee 4—"Irrigation," S. T. Harding, consulting engineer, Berkeley, Cal.

Committee 5—"Hydroelectric Power," F. W. Scheidenhelm, consulting engineer, New York City.

Committee 6—"Recreation, Fish and Wild Life Aspect of Water Resources," M. P. O'Brien, University of California, Berkeley, Cal.

Committee 7—"Basic Water Resources Information," G. R. Williams, consulting engineer, New York City.

Committee 8—"Land Drainage," Edmund Friedman, consulting engineer, Miami, Fla.

Time being extremely short, constructive suggestions and recommendations to task committee chairmen should be contributed promptly.

Compromise version of housing bill should boost residential building

Both houses push measure to avoid construction slump—608 jobs get $500 million more—Direct federal home loans approved

Like an iceberg, the 1950 housing bill agreed upon last week (April 5) by congressional conferees has more to it than shows on the surface. With much left out or held over for later decision, the $4 billion authorization measure promptly passed the House without change.

Holding its last session before a 12-day Easter recess, the House wanted to get the bill on its way before leaving town. Comparable speed is predicted in the Senate, which can proceed slower. (The Senate is staying in Washington.) Neither house wants to let the bill lie around and thus invite a lull in the housing boom.

• **Quick help for housing**—The bill will be a strong stimulus to residential construction—both for apartments and for sales housing. Some of its effects will be immediate. For example, conferees compromised on an additional $500 million for FHA insurance of apartment projects under the generous war emergency Section 608, which died March 1. Further, FHA is authorized to process Section 608 applications received up to that date. As the law stood, it permitted FHA to honor only insurance contracts completed by March 1.

Other provisions of the new bill are calculated both to encourage low-priced housing and to maintain most of the large volume of rental projects that Section 608 has brought into the field. As it passed the House, the new measure steps up FHA's insurance authorization by $2.25 billion under Title II. This part of the National Housing Act hereafter will carry the load for apartment house construction in addition to supplying mortgage insurance for homes that are being built for the purpose of sale.

Liberalization of Title II is counted on to direct more building money into lower-cost, lower-rent housing and into apartment units containing more rooms. Percentage-wise, the largest mortgages are eligible for insurance on homes selling for $7,000 with two bedrooms, or $9,000 with four bedrooms. In rental projects the best terms go to the builder who keeps under the cost limit of $7,000 per dwelling unit and averages 4½ rooms per apartment for his development.

These incentives should accelerate the present trend. Practically no large builders are working above the $11,000 range today. Many of the biggest are aiming below $8,000 as the sales price for their homes.

• **OK's direct federal lending**—More portentous for the future are two duress-loan provisions in the bill. Both houses previously had voted down loans at low interest rates to cooperatives by a government-guaranteed, privately financed corporation. The present bill, however, sets up $150 million for direct government loans to home-buying veterans who show they cannot obtain 4 percent money from private lenders. This special privilege to GI's almost certainly will undergo considerable enlargement and liberalization in future years.

Less important is another direct-loan fund included in the bill. It offers $300 million for educational institutions to build student and faculty housing on long-term loans at an interest rate not much above 2.5 percent. As the colleges do not pack the voting power of the veterans, their future pressure on Congress is likely to be less potent.

As desired by cities and towns, conferees agreed to turn over to communities 43,000 units of Lanham Act war housing for use as public low-rent dwellings without any federal rent subsidy. Real estate people had tried to keep in the bill a requirement that the government allow six months for private buyers to bid on the properties before turning the housing over to the communities.

As another incentive to house construction—in suburban fringe areas that are not too well supplied with utilities or tied down by code restrictions—the bill would permit builders, under Title I of the National Housing Act, to get 85 percent loans up to a $4,350 mortgage, or to $5,000 in high-cost territory. Owners could get 95 percent loans, up to $4,750—or $5,600 in high-cost areas.

• **FNMA loans extended**—In addition, the conferees decided to extend the combination FHA-GI loan provision to the end of this year. This is the provision under which a veteran can get an 80 percent loan insured by FHA and a VA-guaranteed loan for the remaining 20 percent at the cost of a new home.

Most significant of the compromises in the new bill was the decision to increase the authorization of the RFC's Federal National Mortgage Association (Fannie Mae) by only $250 million. Fannie Mae used up its present $2.5 billion fund March 19, when its books showed mortgage holdings of about $1 billion and commitments to buy totaling some $1.5 billion.

Its new $250 million authorization would permit no more commitments. The money could be used only for mortgage purchases. Unless lending institutions increase their rate of offering completed mortgages to Fannie Mae for purchase—under previous commitments—the added fund will last nearly three months.

By that time, Congress and the Ad-

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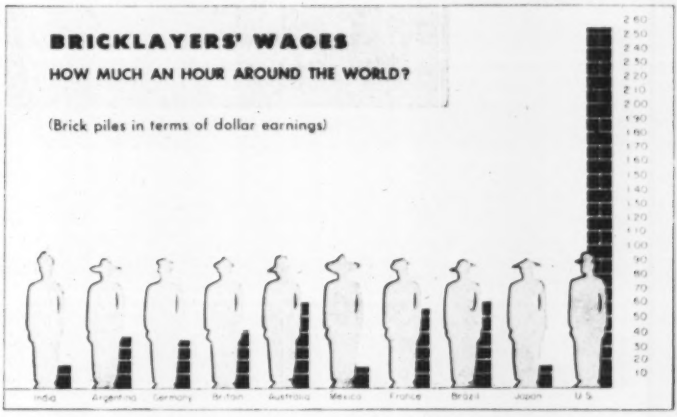


INDIA WAGES VERY LOW—In the article "U. S. Construction Workers Fare Better by Far" (ENR March 9, p. 24) the report from ENR's correspondent in India calculated wages for an 8-hr day, instead of by the hour, and the error was not corrected in time. To arrive at the correct wage, divide the figures for India by 8, and take a look at the accompanying chart. This one is correct . . . Editor

(Continued from page 27)

ministration hope to have a solution to their Fannie Mae troubles. The agency has been the big sustaining prop of the GI 4 percent mortgage market. Practically all houses under $10,000 today are being sold to veterans on these 100 percent GI loans. Congress and federal housing officials do not want to risk complete and sudden severing of the Fannie Mae prop under purchases.

• **Changes planned**—A new bill is being drafted by the Administration which would transfer Fannie Mae to the Housing and Home Finance Agency. Also, it would authorize the chartering of private mortgage associations to buy FHA insured mortgages and issue debentures against them. The Mortgage Bankers Association has been working on such a plan for months.

To make the scheme palatable, another step is proposed for the new bill. This proposal would change the 100 percent VA guaranteed loans—limited to properties under $10,000—to FHA-insured loans. All these loans then would be eligible for purchase by private mortgage associations.

Federal housing officials, home builders and mortgage lenders agree that changes are needed to put FHA and GI loans more nearly on a basis of equality. VA mortgage sales to Fannie Mae have been outrunning FHA paper by 15 to 1 this year.

• **Seek interest parity**—Additional needed steps are much discussed by housing people and mortgage bankers. First of these is parity of interest rates for the VA 4 percent and FHA 4½ percent loans. Most builders believe that a compromise at 4¼ percent for both would prove effective. Mortgage buyers now hold on to their FHA 4½ percent paper; nobody seems to want the VA 4 percent loans. In an election year, an increase in the GI rate is hardly practical, in a political sense.

Another widely recommended change would do away with the ½ percent premium charge on sale of present GI mortgages, while retaining the 2 percent markup on FHA loans. This move, it is felt, would increase Fannie Mae's sales to investors of its GI paper. It now holds more than $600 million of these loans and is committed to purchase about $1.4 billion more.

No part of the $250 million allowed RFC in the bill can be used for loans to prefab manufacturers. Some Senate conferees had held out for a $25 million increase in RFC's present $50 million authority to make such loans, most of which have gone to Lustron, but the conference finally decided against it.

GOING UP—The weather is still wintry, but concrete work rises higher at the site of Wilder Dam, $16,000,000 hydro project of the New England Power Co. on the Connecticut River near White River Junction, Vt. The project will supply additional power for the company's network. Prime contractor is United Engineers & Constructors, Inc., of Philadelphia. The project includes a 1,900-ft-long concrete dam, earth embankments, a five-section spillway and powerhouse. (Photo by H. F. Toles)

Pollution control process faces changes at Everett

Disposal of salt entering pulp wood from sea water will constitute a serious problem before the pulp division of the Weyerhaeuser Timber Co. successfully can institute the magnesium oxide process of wood pulping at its Everett, Wash., plant.

H. W. Morgan, manager of the pulp division, made it plain that considerable time will be required before the MgO process, which has substantially solved the company's water pollution problem at the Longview plant, can be instituted at Everett.

The latter is one of the Washington wood pulp plants under state order to install by Sept. 1, 1951, facilities for treatment of sulphite waste (ENR Feb. 2, p. 33). But plans are under preparation to install the process at Everett and installation will begin when the process can be proved.

• **Operating conditions vary**—Everett uses logs borne to the plant by sea water. Longview logs aren't so borne. Morgan says experiments indicate that absorbed salt may give trouble at Everett in full scale, continuous operation. So at Longview, salt will have to be added to the process for a period of weeks to determine its effect.

Longview, after numerous difficulties were solved, "is now recovering and burning all of its waste liquors," Morgan said. Occasional difficulties still come up. Morgan added that he envisioned a lengthy construction program before the MgO process is ready.

Virginia to use synthetic in third rubber road test

Virginia will put down its third section of rubber highway this summer. Synthetic rubber will be used, rounding out an experimental program which began almost a year ago and includes stretches surfaced with natural and reclaimed rubber.

Site of the third experimental strip is undecided, pending determination of the state's summer resurfacing program.

The two rubberized strips now in use are on U. S. Route 250, west of Richmond. The program is being carried on by the highway department through the Virginia Council of Highway Investigation and Research, at Charlottesville. The council is sponsored jointly by the department and by the University of Virginia's engineering department. Detailed field and laboratory work is being conducted as part of the experiment.

Ward to head ORVWSC

Henry Ward, conservation commissioner for Kentucky, was elected chairman of the Ohio River Valley Water Sanitation Commission, to take office in July. He will replace J. L. Quinn, Jr. C. W. Klassen, technical secretary of the Illinois Sanitary Water Board, chief engineer of the Illinois Public Health Department, was elected vice chairman to succeed Ward.

$700 million program for defense building

House to get construction bill soon after return from Easter recess—Aim is to strengthen key defense points

The House Armed Services Committee has approved a $689,058,181 program to strengthen key defense points overseas and at home and to expand military research activity.

Chairman Carl Vinson (D., Ga.) said he will press for early House action on the Military Public Works Authorization bill. The Senate already has approved the bulk of the projects—proposed by the Department of Defense last year.

Request for a rule to permit a House vote on the bill is now pending before the Rules Committee. The armed services group two weeks ago (March 29) asked for a hearing before the Rules Committee on the request. It is expected that the Rules Committee will grant the hearing soon after the House reconvenes April 18, following its twelve-day Easter recess. There is little doubt that the committee will approve the armed services resolution for a rule and set an early date for bringing up the bill on the floor.

The House knocked out some of the Senate-voted items and added $187,142,771 of "emergency" projects from the department's 1950 program.

No actual appropriations are provided. They would have to be voted later in a supplemental measure or in next year's budget.

Among the major projects:

$22,000,000 for a new secret army "special weapons project" in Utah, near Dugway Chemical Depot. It is reported that it will serve as a proving ground for new chemical weapons.

About $100 million for Army and Air Force construction in Alaska, which top officials have said is inadequately defended. Included are funds for Eielson Air Force Base, including high-speed fueling apparatus for putting gasoline into B-36s in a hurry. Other such equipment would be installed at other Air Force bases.

A new $18,000,000 air defense training center at Dam Neck, Va.; tightening Army and Air Force defenses around the northwest atomic plants; construction of Army installations to protect the vital Great Lakes locks; three Air Force "listening posts," reported to be located in the Arctic; and housing for 7,651 service families to cost $130 million.

Overseas construction includes: $4,500,000 at the USAF air transport base, Dhahran, Saudi Arabia; $13,-071,480 in Okinawa; $5,958,000 in Kwajalein; and $46 million at Guam.

NEW TUNNEL METHOD—This steel section for the Baytown tunnel, a 34-ft, 10-in. cylinder 300 ft long, stands in shipways at Orange, Tex., awaiting temporary bulkhead for launching and floating to vehicular tunnel site 20 mi from Houston. Concrete will be placed inside only, a new departure in sunken-section tunneling (ENR May 19, 1949, p 23). (Wide World Photo)

Raise sunken USBR dredge

The new million-dollar Bureau of Reclamation dredge which sank recently in the Colorado River (ENR Dec. 15, 1949, p 24) has been re-floated and towed to Needles, Cal. The machinery has been dismantled for reconditioning.

Bureau officials turned down all bids for floating the craft, lowest of which was $250,000, and the work eventually was done by force account. The San Francisco firm of Pillsbury and Martignoni, marine surveyors, assisted the bureau as consultants.

Funds ok'd for '50 work on Long Island parkways

Full approval of Long Island State Park Commission plans for parkway extensions this year was voted in closing hours of the 1950 New York State Legislature. Every cent the commission asked was appropriated. (For details of plans of projects for this construction season, see ENR Jan. 5, 1950, p 36.)

Allocations total $16,350,000. Of this, $9,300,000 goes toward construction of Captree Causeway, to cross Great South Bay, linking the Southern State Parkway with Ocean Parkway's east end. The 10,800-ft pile-and-pier-supported roadway will have a 600-ft steel arch span at its center. Near the south end of the causeway, a 100-ft bascule will span the State Boat Channel.

Both structures have been designed for the Long Island State Park Commission by Hardesty & Hanover, New York consulting engineers. Designs have been completed since the war, but land for the project was acquired back in 1931.

Bids on first portions of the work are to be asked within 60 days, according to the commission.

Grading, drainage, and structures for the Northern State-Sagtikos Parkway—9 miles in all—will be completed this year with $3,000,000 provided. There were $1,750,000 allocated for construction of center curbs to make divided highway of the entire Long Island system; 6½ miles of curb will be built on the Northern State, 8 miles on the Southern State.

Lastly, $2,300,000 were appropriated for completion of the marine stadium under construction on Zachs Bay at Jones Beach (ENR Dec. 15, 1949, p 29).

NSPE asks $100 top for Point 4 fees

National Society of Professional Engineers thinks Congress is being "unrealistic" in legislating $50-per-day maximum fees for engineering consultation in the Point 4 program. It wants $100.

The $50 figure is in Point 4 legislation now before the Senate's Foreign Relations Committee. NSPE's contention was presented by Paul H. Robbins, executive director.

NSPE made several other recommendations on the bill. For one thing, it wants a professional engineer to head the proposed Institute of International Technical Cooperation. It was emphasized that this group, as administrator of the Point 4 program, should be directed by one with "full appreciation of the fact that the program is largely one of an engineering nature."

There also should be adequate engineering representation on any principal advisory body to consult with the President and the administrator, NSPE urged. It objects to the failure of the pending bill to mention engineering in its definition of the interests which should be represented on such an advisory board.

Finally, NSPE reiterated its stand that the fullest possible use be made of the services of private agencies and individuals in the program. "The emphasis throughout should be on private enterprise," Robbins said, "including fullest use of private engineering."

CONSTRUCTION BUSINESS

Industrial building backlog rising; biggest gains in Ohio and Indiana

A sudden rise in the amount of proposed factory and other industrial buildings spells good business for construction this year.

The ENR backlog of proposed industrial building, now $4.6 billion, increased $209 million in the first two months of this year. Additional work proposed in March promises to run the backlog considerably higher. By comparison, there was no significant change in the backlog between February and December of last year.

This ENR backlog of proposed industrial building is a continuous inventory of what industries plan to build. When a plant is proposed, ENR adds it to the backlog; when the work is contracted, or else plans for it are canceled, ENR drops it from the backlog.

Right now there is enough industrial building in the proposed work stage to keep contracts going five years at the 1949 rate. The recent big rise in new proposed work means industry has started on a new crop of building plans.

• **Ohio and Indiana get most**—The bulk of the 1950 bulge in proposed work is in Ohio and Indiana. Of the $209 million net increase in backlog of the U. S., $197 million was for industrial plant in these two states; little change occurred elsewhere.

But over the past 12 months, there have been significant changes in regional distribution of proposed industrial plant.

• **Backlog trends by regions**—Since February a year ago, the backlog of proposed industrial buildings has increased $231 million for the U. S. as a whole. A breakdown of the regional location of the new proposed construction shows that the net total figure hides wide variations among areas. Some construction market areas have shown a big upsurge in industrial building backlog.

In the Middle West, the backlog of new proposed industrial buildings has increased 26% since a year ago, compared with increases of 10% in the South, 8% in the Middle Atlantic States, and 3% in the Far West. The backlog has actually declined 7% in the region west of the Mississippi, particularly Texas, and declined 3% in New England.

• **Industrial building outlook**—The outlook for industrial building is brightening. That shows not only in the ENR backlog figures; also, the most recent quarterly survey by the S.E.C. and the Department of Commerce reveals that American business is boosting its earlier plans for capital expenditures, and now intends to spend only 8% less than last year during the first half of 1950.

About 30% of business capital expenditures are scheduled for new construction.

• **New proposed work trends upward**—ENR adds proposed industrial building to backlog, then subtracts from the backlog work advanced to active status or canceled.

Contract volume tends to follow the proposed industrial building.

These new additions, now available for the first quarter of 1950, total $480 million—40% above a year ago; additions to the industrial building backlog last year totaled $871 million for the whole year, 26% below 1948; contract awards totaled $952 million, 13% below 1948.

If the high rate of additions to backlog of the first quarter of 1950 continues it seems likely that contracts will increase.

Proposed industrial building backlog
(Private construction, in thousands)

	End of February			Feb., 1950 backlog	
	1949	1950	% change 12 months	Proportion of U. S.	Years at 1949 Contract Rate
Maine	$2,811	$1,402	−62%	0.03%	*
New Hampshire	7,444	7,512	+1	0.16	*
Vermont	630	590	−6	0.01	*
Massachusetts	29,791	30,680	+3	0.66	1.1
Rhode Island	8,915	9,911	+12	0.20	4.5
Connecticut	38,298	36,083	−6	0.78	4.0
NEW ENGLAND	**88,089**	**85,328**	**−3**	**1.84**	**2.3**
New York	232,784	263,852	+13	5.70	16.8
New Jersey	193,084	194,559	+1	4.20	16.5
Pennsylvania	338,950	374,993	+11	8.10	4.4
Maryland	31,431	27,883	−11	0.61	2.7
District of Columbia	220	220	-	*	*
Delaware	20,243	20,353	-	0.44	0.6
MIDDLE ATLANTIC	**818,406**	**881,424**	**+8**	**19.00**	**5.2**
Virginia	65,146	66,764	+2	1.44	14.9
West Virginia	13,661	13,181	−1	0.28	3.0
North Carolina	28,398	32,424	+14	0.70	6.4
South Carolina	48,022	46,892	−2	1.01	5.7
Georgia	48,529	50,092	+7	1.15	5.1
Florida	18,250	50,225	+165	1.85	2.1
Alabama	37,410	37,096	−1	0.80	2.4
Mississippi	52,834	52,284	−1	1.13	6.5
Louisiana	79,482	85,305	+7	1.84	2.6
Kentucky	14,320	16,458	+14	0.36	2.9
Tennessee	41,372	42,677	+3	1.03	2.8
SOUTH	**457,264**	**500,395**	**+10**	**10.80**	**4.6**
Ohio	388,258	467,129	+20	10.00	8.1
Indiana	241,612	348,663	+44	7.52	15.2
Illinois	113,914	164,171	+44	3.55	2.2
Wisconsin	42,442	39,601	−6	0.85	1.3
Michigan	98,447	102,740	+4	2.22	4.5
MIDDLE WEST	**884,673**	**1,122,344**	**+26**	**24.00**	**3.9**
Minnesota	43,631	46,753	+5	1.01	3.7
Iowa	16,946	20,264	+19	0.56	3.0
Missouri	109,614	137,635	+26	2.98	11.8
Arkansas	116,293	106,035	−9	2.29	5.1
North Dakota	1,615	17,296	*	0.37	*
South Dakota	1,112	1,419	+27	0.03	*
Nebraska	15,321	20,606	+34	0.23	7.4
Kansas	146,629	146,262	-	3.02	21.2
Oklahoma	26,632	23,936	−16	0.52	2.0
Texas	1,174,107	981,287	−17	21.19	5.7
Montana	19,169	22,250	+16	0.48	*
Wyoming	25,915	27,642	+7	0.51	7.9
Colorado	8,230	27,527	+237	0.60	5.3
New Mexico	19,075	23,391	+23	0.51	*
WEST OF MISSISSIPPI	**1,720,031**	**1,597,111**	**−7**	**35.30**	**6.2**
Idaho	13,477	20,712	+54	0.44	*
Utah	19,215	1,769	−91	0.04	*
Arizona	5,352	1,427	−73	0.03	*
Nevada	2,840	4,174	+46	0.09	*
Washington	57,098	72,826	+28	1.56	10.6
Oregon	66,218	67,953	+1	1.46	18.6
California	267,872	270,434	+1	5.97	1.8
FAR WEST	**432,073**	**444,408**	**+3**	**9.60**	**2.3**
United States	**4,400,536**	**4,631,362**	**+5**	**100.00**	**4.9**

*Figure too small to be significant.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 89, went to press.)

Bridge—Nassau County Bridge Authority, Mineola, N. Y., will take bids April 20 for constructing bridge over Reynolds Channel, Atlantic Beach, N. Y. Cost is estimated at $6,000,000. Hardesty & Hanover, New York, are consulting engineers.

Patapsco-Liberty Road Tunnel—Bureau of Water Supply, City of Baltimore, received low bid for lining Patapsco-Liberty Road Tunnel, for city's water supply, from Samuel R. Rosoff, Ltd., Baltimore, $2,866,000. This is second opening on this project; former low bid of $3,151,150 was rejected. Leon Small, Baltimore, is engineer for the project.

Hospital—Bid opening has been extended to May 5 for the construction of hospital and laboratory for Mount Sinai Hospital, New York. Cost will be about $7,000,000. Jacobs & Kahn, New York, are architects. York & Sawyer, New York, are consulting architects, and Fred M. Severud is engineer.

Soldiers Home—Federal Soldiers Home, Washington, D. C., plans building program including domiciliary building, hospital addition and other buildings at Soldiers Home to cost about $13,000,000.

Classroom and Office—Barrett & Hilp, San Francisco, have been awarded contract for classroom and office at the University of California, Berkeley, by the Regents of the University at $2,015,957.

Foundry—Bids will be opened April 19 for foundry for Ford Motor Co., Dearborn, Mich. This is part of $10,000,000 plant to be erected in Cleveland. E. A. Fairbrother & Co., and George Michls, Detroit, are engineers and architects. Albert Kahn Associated Architects and Engineers, Inc., Detroit, is consulting engineer.

Hospital—St. John's Hospital, Springfield, Mo., will take bids May 17, for hospital in Springfield to cost $5,000,000. Magulo & Quick, St. Louis, are architects.

Housing—St. Louis Housing Authority, St. Louis, will open bids May 25 for constructing 12 apartment buildings for housing project in St. Louis to cost $7,500,000. George Hellmuth Associates, St. Louis, are architects.

Schools—Galveston Public Schools, Galveston, Tex., voted $2,950,000 bonds for two high schools in Galveston. Preston M. Geren, and R. R. Rapp, Galveston, are architects.

Apartment—Essex House—Dolan Co., St. Louis, plans constructing 12-story apartment, in St. Louis, to cost $3,900,000. Cay G. Weinel, St. Louis, is architect.

Academic Building—Wise Contracting Co., Richmond, Va., has been awarded contract to build academic building at University of Virginia, Charlottesville, at $1,067,482. Eggers & Higgins, New York, are architects.

School for Blind—Tennessee Board of Education, Nashville, awarded contract for nine buildings at School for Blind, Nashville, to Rock City Construction Co., Nashville, $1,701,743. Marr & Holman, Nashville, are architects for the school buildings.

Water System—City of Fairmount, W. Va., plans constructing pumping station, reservoir, and filter plant. Cost will be about $1,200,000. Blundon, Snyder & Small, Keyser, W. Va., are consulting engineers.

Willow Freeway—Ohio State Highway Department, Columbus, awarded contract to Lombardo Brothers Construction Co., Cleveland, for extending Willow Freeway, in Cleveland, Cuyahoga County, at $1,220,343.

Housing—Austin Housing Authority, Austin, Tex., plans constructing Rosewood Housing Project, $2,265,000, and Chalmers Housing Project, $1,240,000. Giesecke, Kuehne & Brooks, Austin, are architects for Rosewood. Fehr, Granger & Walling, Austin, are architects for Chalmers.

Mill—Kendall Mills, Paw Creek, N. C., awarded contract to build warehouse and main mill extension at Newbury, S. C., to Daniel Construction Co., Greenville, S. C. Estimated cost is $1,000,000.

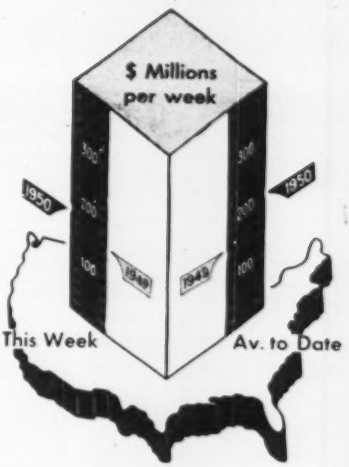
State Office—Ralph & Horwitz, Portland, Ore., were low bidders at $1,136,747, for constructing State Office building when the State Board of Control, Portland, opened bids. Dougan, Heims & Came, Portland, are architects for the building.

Dwellings—Panorama Community Homes, Los Angeles, awarded contract for constructing dwellings in Los Angeles to Kaiser Community Homes, Los Angeles, to cost an estimated $1,487,200.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Apr. '50	431.95	236.47
Building Cost	Apr. '50	362.75	196.11
Volume	Mar. '50	351	154



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of Apr 13 1950	Cumulative 1950 (15 wks.)	Cumulative 1949 (15 wks.)	% chge
Federal	$14.8	$451.9	$341.5	+32
State & Mun.	57.7	840.0	755.1	+13
Total Public	$72.5	$1,291.9	$1,096.6	+18
Total Private	165.1	1,786.2	1,112.3	+61
U. S. Total	$237.6	$3,077.2	$2,208.9	+39

Contracts by type of work

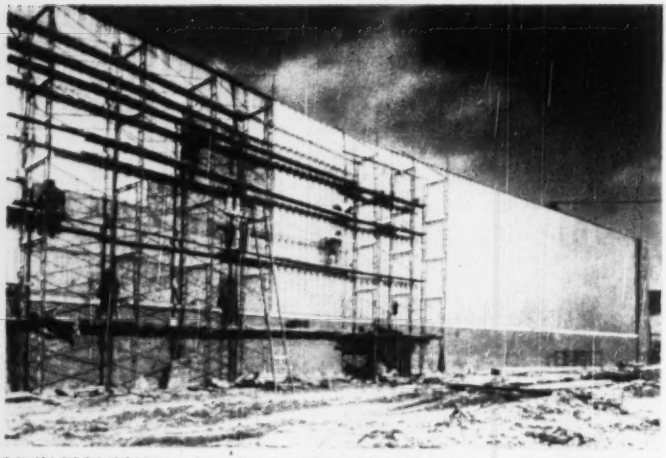
	This Week	Cumulative 1950 (15 wks.)	Cumulative 1949 (15 wks.)	% chge
Waterworks	$4.5	$75.1	$40.8	+84
Sewerage	4.6	66.2	62.2	+6
Bridges	6.4	86.9	102.7	−15
Highways	16.9	273.8	153.7	+78
Earthwork, Waterways	10.6	117.9	175.8	−33
Buildings, Public	27.2	567.9	486.8	+17
Industrial	18.0	313.9	315.3	−1
Commercial	81.1	1,233.4	795.9	+90
Unclassified	12.4	243.1	165.5	+47

NOTE: Minimum size projects included are: Waterworks and waterway projects, $25,000; other public works, $50,000; industrial buildings, $65,000; other buildings, $250,000.

New capital for construction

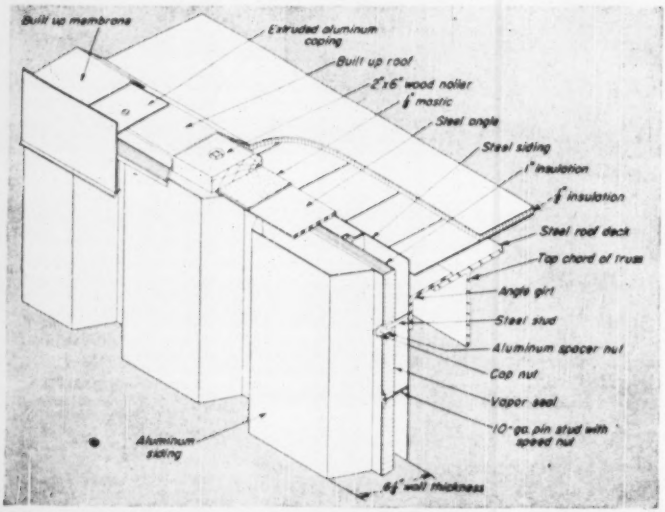
	Cumulative 1950 (15 wks.)	Cumulative 1949 (15 wks.)	% chge
NON-FEDERAL	$1,284.7	$1,439.9	−11
Corporate Securities	56.6	679.7	−17
State and Municipal:			
Excl. Housing	577.3	548.6	+5
Housing	190.8	211.5	−10
Total Capital	$1,284.7	$1,439.9	−11

Windowless



MAIN ELEMENTS of the walls are steel-panel interior facing, glass-fiber insulation and aluminum-panel exterior facing. (The Austin Co. photos)

FLAT BAR carrying a row of studs was welded to the steel panels, midway between sill and bottom truss-chord, to give four lines of support to 25-ft wall.



ONLY 6½ IN. THICK, weighing 32 psf, the insulated wall has a smaller heat transfer coefficient than a 12-in. brick wall.

ALUMINUM, steel and glass-fiber are combined to form windowless, breathing-walls for the new Lincoln Electric Co. manufacturing plant in Cleveland, Ohio. According to the designers, the appearance of the walls is architecturally pleasing; erection is fast and simple; and insulation properties are superior to those of solid brick walls. The "breathing" feature is obtained by circulating air in the wall.

Construction of the 1,427x500-ft plant—for the manufacture of welding equipment and electrodes—is scheduled for completion late this year, with manufacturing operations to start next spring.

An $8,500,000 contract for its construction was awarded last June (ENR June 30, 1949, p. 12). It will be essentially a one-story building, with a centrally located 60-ft service floor extending the full length of the building, below ground.

Centrally located is a two-story 360x120-ft office building. Also centrally located and at the service-floor level are: cafeteria and kitchen, conference and demonstration rooms, and a 200x120-ft area for the Lincoln welding school. Locker rooms and sanitary facilities are located along the 60-ft corridor, leaving a 20-ft clear runway. A 180x60-ft boiler house adjoins the plant proper on the north.

• **Underground access**—Access to the plant, for all personnel and visitors, is underground. They will enter a small building at the south side of the plant and descend a flight of stairs to the office lobby at service-floor level.

Production workers will pass along a service corridor and up one of 20 stairways to the production floor at ground level. This arrangement will land each worker within 200 ft of his work and minimize the interruption of production during rush hours.

• **Lightweight wall**—The insulated steel and aluminum exterior wall is only 6½ in. thick and weighs only 32 psf. But it has a heat-transfer coefficient of 0.25 as compared with 0.50 for an 80-lb, 8-in. solid brick wall, or 0.36 for a 12-in. solid brick wall weighing 120 psf.

No vision slots are provided in the windowless walls as a point of economy both in construction and plant maintenance. The production floor is so large, the designers point out, that relatively few of the workers would be

Plant with Breathing Walls

near enough to the wall to receive any benefit from the vision slots.

• **Four wall elements**—Structurally, the 94,000 sq ft of breathing wall enclosing the plant is made up of four elements: (1) an interior facing of 1¼-in. deep channel-shaped steel panels, which have been ordinarily used in roof construction, (2) a vapor seal, (3) a 1-in. thickness of glass fiber insulation and (4) an exterior facing of 17-in. wide by 3½-in. deep, box-section panels of 20-ga aluminum.

The interior steel panels and the exterior aluminum facing panels stand on end to give vertical lines inside and out. The purpose of the large, open, vertical vents formed by the box-section aluminum panels is to insure vertical circulating of air in the wall—hence, it is termed a "breathing wall".

This air-circulation, together with placement of the vapor seal between the inner steel-panel facing and the 1-in. insulation, was planned to prevent the formation of moisture within the wall. An extruded aluminum coping just above the top of the wall keeps water from getting down into the wall, yet permits the air to pass out.

The insulated steel-and-aluminum wall extends 25 ft above the top of a 12-in. thick limestone sill, which caps a brick and concrete wall 8 ft above ground line. The metal wall is supported by three lines of girts—at the sill line and at the top and bottom chords of welded, H-beam roof trusses.

• **Erecting the wall**—First operation in erecting the exterior wall was to weld a row of ⅞-in. threaded studs to each line of girts. Then, the steel panels, pre-punched to fit over the studs, were erected and arc-welded to the three lines of girts.

A bar carrying a fourth row of ⅞-in. threaded studs was arc-welded flat to the outside of the steel panels midway between the sill and the bottom chord of the roof truss. This gave four lines of support for the 25-ft long aluminum facing panels.

Next operation was to stud-weld 10-ga headless pins to the outside face of the steel panels for supporting 1-in. thick, 24x48-in. glass-fiber panels. Four pins hold each of these panels in place.

The glass-fiber panels, coated on their inside surfaces with an asphaltic-compound vapor seal, were pushed flat against the steel panels, the pins and studs being pushed through the insulation. The pins then were capped with clips to hold the insulation in place.

• **Facing installed**—The aluminum panels went on last, over the insulation. Each panel was pre-punched with four holes along each side, to match the studs previously welded to the four lines of girts. To insure proper alignment of these panels, the studs were provided with spacer nuts that were coated to eliminate galvanic action between steel and aluminum. After an aluminum panel was in place, aluminum acorn nuts were screwed onto the studs, snug against the panels, completing the installation.

Since the coefficient of expansion of aluminum is twice that of steel, provision was made for an extra ⅛-in. expansion within the 20-ft distance between the main girts. This called for vertically slotted holes at the bottom girt and at the two girt lines on the roof trusses. A tight connection is made to the ⅞-in. studs welded to the bar midway between the top of the brick wall and the bottom chord of the trusses.

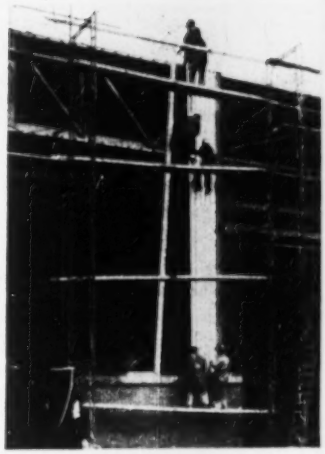
One difficult problem was that of erecting the long aluminum facing panels without damage. They arrived at the job well crated and were erected with care.

A 6-man crew is erecting from 70 to 80 lin ft of steel panel inner facing per day, and an 8-man crew is making comparable progress erecting the insulation and aluminum facing.

• **Welded flat roof**—Other interesting structural details of the plant include a flat roof formed with 1¼-in. deep, channel-shaped, welded, steel panels, 4-in. glass fiber insulation and four layers of asphalt and felt. It has a slag topping. It is supported by steel purlins carried on the top chords of the roof trusses.

These members in turn were field welded to 10-in., 49-lb H-beam columns spaced 60x40 ft. Jack trusses, spanning 40 ft between columns, carry a line of 60-ft trusses at the center of their spans. This gives a 20-ft span for the roof purlins.

The production floor of the plant, designed for 1,000-psf load, is either an 8-in. reinforced concrete slab placed directly on compacted earth or a 6-in. reinforced concrete slab on steel beams over the service corridor.



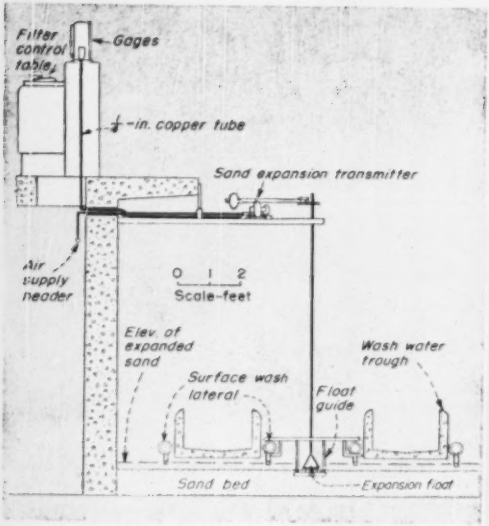
THREE LINES OF GIRTS, one at the sill, two at the roof truss chords, carry the weight of the wall.

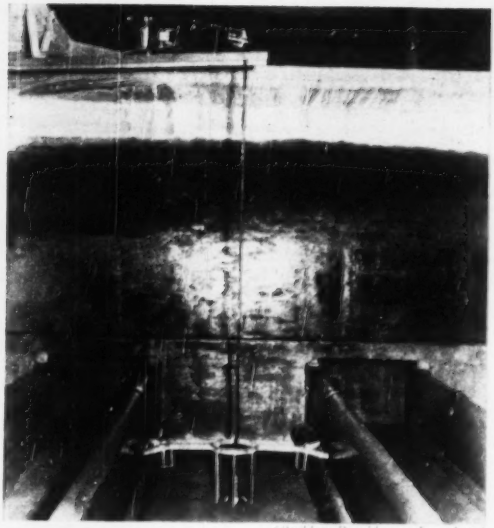
The clear distance from floor to bottom of roof trusses is 23 ft in the production area and 25 ft in the north and south bays, where railroad sidings and truck docks for receiving raw materials and shipping finished products will be served by overhead transfer cranes. Two expansion joints across the 500-ft width are located at the one-third points of the long side.

• **Lighting and ventilation**—The lighting equipment and ventilating controls were designed to maintain efficient working conditions in all parts of the plant. Dust and vapors created by metal-working and processing activities will be removed at their sources and exhausted through the roof. A continuous supply of air will be delivered to the various working areas ventilating units mounted on platforms in the roof trusses.

Total floor space in the plant will be 850,000 sq ft. Major contract quantities include: 94,000 sq ft of insulated aluminum-and-steel side walls; 16,000 lin ft of fluorescent lighting; 5,600 tons of structural steel; 500 tons of reinforcing steel; 25,000 cu yd of concrete; 46,000 sq yd of bituminous pavement for service roads and parking; and 1,200,000 bricks.

• **Contractors and designers**—The Austin Company, contractors on construction of the plant, also designed it, in collaboration with engineers and top management of the Lincoln Electric Co. Henry Angelberger is project superintendent for the Austin Co., and H. A. Burnip is project engineer for the Lincoln Electric Co.

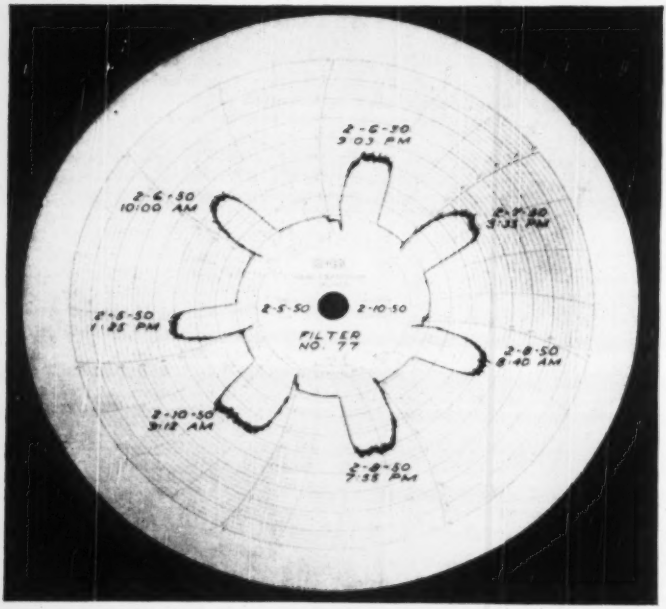




(Sanders Providence, Inc. photo)

Sand-expansion floats and air-actuated recording instruments tell . . .

The Filter's Operating Story



VERTICAL EXPANSION AND CONTRACTION of the sand surface during backwashing are charted on a revolving graph. Length of washing period and the extent of expansion of sand being washed are recorded.

THE RECORD produced by automatic indicating and recording sand-expansion gages on rapid filters is of greater importance than that of loss-of-head and rate-of-flow charts. This tip is passed along by John R. Baylis, Chicago's famed water scientist. It's based on several years of experience with 80 instruments at Chicago's South District filtration plant.

In answer to the question, "Why are they better?", Mr. Baylis says: "I and R sand-expansion gage charts provide a means for computing time of filter washing, thus checking the filter-operator report. And there's not much the operator can do that's not indicated on the chart. Short and long periods of washing are immediately made apparent. If sand expansion is greater or less than that desired, this is also revealed."

• **Type of gage**—Two or three types of automatically indicating and recording gages have been perfected, Mr. Baylis recalls, for measuring expansion of the sand bed during washing. These are based on a sand float. The float must have a slightly greater specific gravity than water but slightly less than expanded sand so that it remains at the top of the sand being washed.

The I and R gages at the Chicago

plant consist of a sand float rod—connected to a transmitter above the filter and a receiver with time chart on the operating table. Compressed air actuates the transmitter as well as the receiver (see drawing).

The float is a brass cone with a slightly ovaled 6-in. closed bottom. Four quarter-point vertical guards around it hold the float in position. Disturbance is caused by surface wash-jet agitation and horizontal movement of expanding sand.

A ⅜-in. monel-metal rod extends upward from the float's apex to the transmitter. Pivot holes spaced one-inch apart at the rod's upper end permit adjustment for sand-level variation. Float and rod are heavy enough to sink readily in the water and require counterweighting.

• **Transmitter**—The transmitter—which is suspended out over the filter on a twin channel-iron cantilever—is made up of a beam arm and air-operated bellows. The vertical-connecting rod is connected to the long end of the fulcrumed 33-in. beam arm. A counterweight on the short arm can be positioned so that the float will sink just to the surface of expanded sand—but not into it. Fine adjustment is by a screw on a lug attached to the arm. Range of expansion, Mr. Baylis advises, is 9 in.

Movement of the beam arm—set up by the float—is translated through a simple mechanism to the bellows. Air pressure is varied from about 17 lb with sand at rest to 2 lb at 8-in. expansion. Air is supplied from a header by a 0.25-in. copper tube. Pressure variations are transmitted to the receiver through similar piping.

• **Receiver**—The receiver consists of a bellows equivalent to that of the transmitter, a pen arm and a revolving recording gage. Movement of the bellows—actuated by the transmitter—changes position pen-carrying arm, the pen being held against the recording chart. The chart is revolved by a synchronous motor. Speed is one revolution per hour.

Just before the filter is washed, the motor switch is turned on. The motor continues to operate until the chart passes through an arc of 51 deg and 26 sec. At this point it will shut off automatically providing the switch has been cut. During the interval of operation—about 8 min—washing is completed and sand drops back to filtering position. The recorder may be kept in operation by leaving the switch shut.

Sand expansion was about 3 in. for the seven washes shown in chart, indicating proper opening of the backwash valve. Time required for the backwash valve to open to pre-set position of 15 in. is 30-45 sec. And about 1.0-1.5 min is needed for the bed to become fully expanded after the valve is opened gradually. If the backwash valve is opened suddenly, the bed will be fully expanded in about 0.5 min. The sand-expansion chart also reveals that one of the washes was shorter than that called for by filter-washing instructions.

When washing filters, operators are instructed to open backwash valves one-half. Although the four washwater lines leading to the four filter galleries are equipped with rate controllers, they are not operated as such. Position of butterflies in each valve is fixed so that only a certain amount of water can pass through. This amount varies slightly depending on head in supply tank. Rate of backwash is then selected to give the desired amount of sand expansion, which varies with water temperature.

Three-inch expansion of sand cleanses the filter bed effectively with a backwashing period of about three minutes, and valve opened one-half.

Total time—for opening the valve, backwashing the filter and closing the valve—is not more than five minutes. This gives ample time for the wash to be fully recorded within the 8.5-min segment of chart operation.

• **Performance**—The I and R instruments respond so rapidly to changes in level of expanding and contracting sand surfaces, Baylis points out, that they may be said to be instantaneous.

The South District filtration plant is under the department of public works, O. F. Hewitt is commissioner, W. W. DeBerard city engineer, and H. H. Gerstein chief filtration chemist.

The recording and indicating instruments were manufactured by Builders-Providence, Inc., Providence, R. I.

Nitrates in Water Seen Cause of Infant Disease

The fact that the nitrate content of well water may be a cause of the "blue baby" disease (methemoglobinemia) has spurred health authorities in several states to a more detailed check on this content of water.

Writing in the publication MICHIGAN PUBLIC HEALTH, O. F. McGuire, chief of the Section of Sanitary Bacteriology and Chemistry of the State Health Department, called attention to the fact that high nitrates in the well water, used in a baby's formula, are changed to nitrites in the baby's intestinal tract.

These nitrites then combine with the red blood cells to change the color of the blood and reduce its ability to carry oxygen.

"The nitrate content of water was at one time used as index of pollution due to its direct relationship with organic matter," Mr. McGuire says. "Following the development of the bacteriological tests and the coliform index, nitrites and nitrates as indicators gradually lost their usefulness to the point where water laboratories seldom made any nitrate tests.

"During the past few years, however, the nitrate content of water has assumed new significance. The relationship between the nitrate content of water and 'the blue baby' was first reported from Iowa in 1945, and attention was focused on this problem in Michigan in 1947."

To determine the prevalence of high nitrate waters in Michigan, nitrate determinations were made on all bacteriological water samples submitted to the Michigan Department of Health Laboratories during the first four months of 1949. These water samples came from the eastern half of the lower peninsula.

Of 2,874 samples, 202 contained over ten parts per million of nitrates.

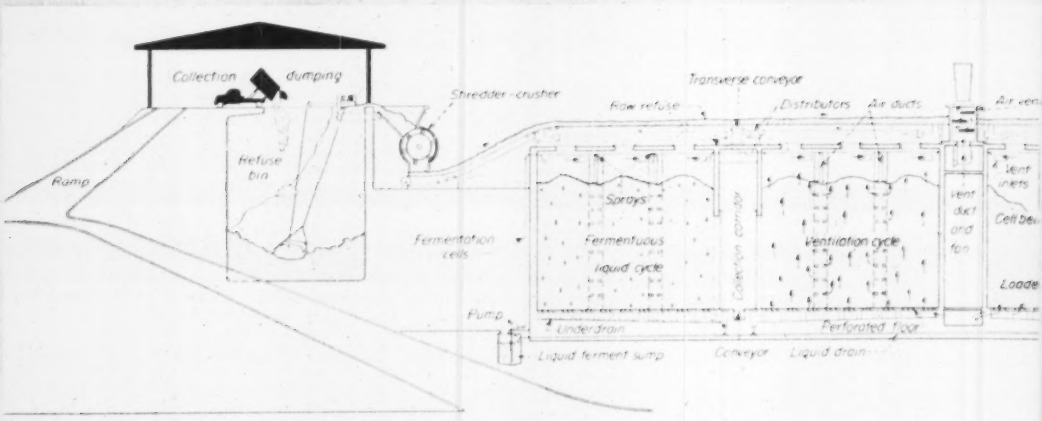
Eighty-five percent of the high nitrate waters were from dug wells or wells less than 50 ft. deep. The small number of deep wells involved consisted chiefly of rock wells which may have been improperly sealed or cased.

Over 90 percent of the samples examined were from private wells. The remainder represented public or municipal water supplies.

Similar and more extensive studies have been made in a number of states including Ohio, Illinois and Iowa.

"Where expectant or nursing mothers or newborn infants are consuming water from private wells of unknown quality, the water should be examined for nitrates," Mr. McGuire said.

At the same time, writing in the February CONNECTICUT HEALTH BULLETIN, Warren J. Scott reported Connecticut fortunately had no incidence of such cases, since most public water sources which originate from wells contain no more than 5 parts per million of nitrate nitrogen. However, he cautioned on the necessity of digging wells deep enough and properly casing and sealing them.



FLOW DIAGRAM OF THE VERDIER PROCESS of refuse disposal by odorless fermentation as planned for Miami, Fla.

Fermentation for Garbage Disposal

Raymond A. Williams

Director, Dept. of Public Service, Miami, Fla.

REFUSE DISPOSAL by the "Verdier" process of fermentation—long a controversial subject in this country—will become an actuality for Miami, Fla. next year when a new refuse treatment plant will be completed in that city. The process is said to produce no odors and its end result is an immediately usable agricultural fertilizer.

The plant will not be city-owned. It is being financed by a private company with a $2,400,000 fund to cover the costs of design, construction and operation. The city will pay $590,000 annually to the company for the disposal service and, at the end of 30 years, will receive full title to the plant.

An option in the contract also permits the city to buy the plant outright after 15 years. Miami now spends $1,280,500 annually for collection and disposal of its refuse, by incineration. Under the new contract the city will collect the refuse, but cost of disposal will be assumed by the company.

• Plant capacity—Rated capacity of the plant is 900 tons of refuse per day. Revenue received from sale of fertilizer—an end product of the process—will belong to the financing company until the plant is sold or turned over to the city.

Since this plant is the first of its kind to be built in this country its owners must protect Miami with a performance bond to insure against financial loss to the city. Contract completion date is Sept. 1, 1951.

• Low-grade fertilizer—The Verdier process is identified as an "aerobic oxidation process of fermentation", meaning simply: the bacteria live in the presence of oxygen and create a low-grade commercial fertilizer as an end product.

Aerobic fermentation was first introduced about 1911 by the Italian, Buscan. Since then several variations of his process have been introduced and abandoned in the United States—due chiefly to failure in mechanics of handling and processing refuse.

J. G. Verdier, a prominent French engineer and scientist, added certain scientific refinements to the process and perfected it to the point of successful mechanical handling of the refuse. He built his first plant, in 1927, at Cannes, France.

• Odorless process—Verdier's aerobic process of fermentation is odorless. It should not be confused with the anaerobic process used for sewage-sludge disposal, which produces odorous gases.

The aerobic process is relatively rapid, requiring only 18 to 24 days for complete treatment. It involves a slow form of combustion, giving off only steam vapor and carbon dioxide; both of which are odorless.

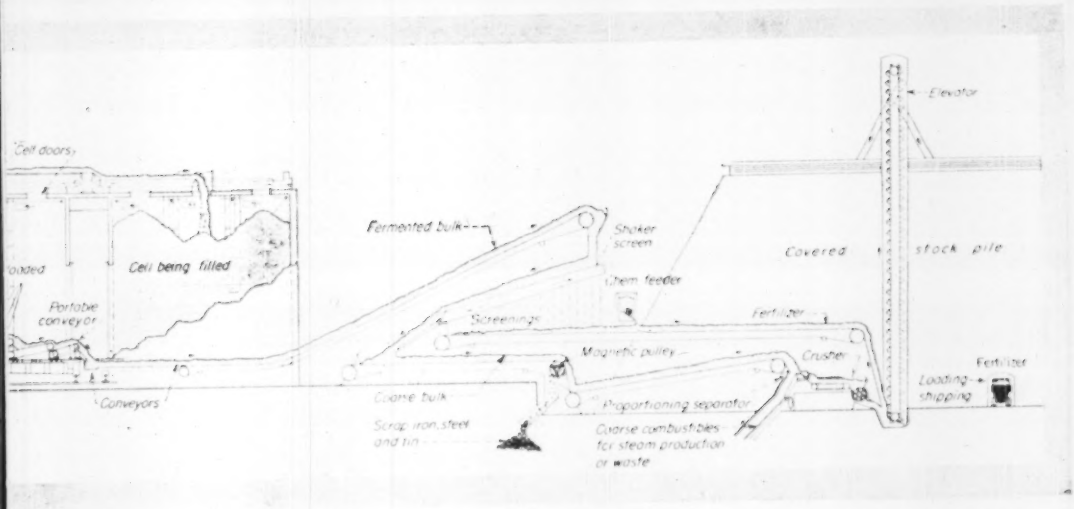
Fermentation of the rubbish in the concrete storage cells reach temperatures of 160 to 180 deg F. This destroys all pathogenic organisms, producing an aseptic end product ready for agricultural usage. This fertilizer also is weedless—free from seeds.

• How it operates—As shown in the flow diagram, operations of the Miami plant will be like this:

Refuse will be dumped from collection trucks directly into an enclosed bin of 48-hr. storage capacity. From this bin it will pass through a shredder and onto longitudinal conveyors which, in turn, will feed shredded refuse onto transverse conveyors for charging a series of reinforced concrete fermentation cells.

The charged cells will be closed and not re-opened during the 18 to 20-day fermentation period. Before closing the cells, the ferment liquor drained from previous batches will be sprayed over the new batch for inoculation. Air also will be circulated in each cell through vertical ducts and built-in vents.

Heat generated during fermentation



plant will handle 900 tons daily. (Courtesy Maurice H. Connell & Associates)

will drive most of the moisture (odorless gases) out through discharge vents near the tops of the cells. The remainder, containing the aerobic bacteria which will act as a seeding element for the succeeding batches, will be drained off through perforations in the cell floor and piped to an enclosed pump for recirculation.

• **Handling the refuse**—After the required fermentation time has elapsed, a mechanical loader and portable conveyor will feed the fermented mass onto a conveyor system. Shaker screens located in this system will separate the fine humus from the coarse bulk. The fine material will pass beneath a chemical feeder and on to a covered stockpile of commercial fertilizer.

Coarse material passing across the screens will flow over a magnetic pulley which will extract all magnetizable materials. These will be chuted into a scrap-metals bin for salvage.

The rest of the coarse material will be fed through a proportioning separator where part of it can be extracted and burned to make steam power for heating the plant, pumping water or sterilizing certain plant facilities. Initial plans, however, do not contemplate making steam power by this method.

The remainder of the bulk humus will be fed to a crusher and on to the fertilizer stockpile. A vertical bucket elevator will hoist the fertilizer from the two conveyor lines to the top of the stockpile.

The final mixed product of organic and inorganic materials will make a humic fertilizer and an excellent soil reconditioner.

• **Designers and builders**—Maurice H. Connell & Associates, Miami, Fla., are preparing plans and will supervise construction of this refuse-disposal plant. Financing, construction and operation will be by the Florida Caribbean Biothermal Operating Company, Inc.

Most of U. S. Unmapped; Big Job Ahead

ONLY A QUARTER of the United States is adequately mapped. And at the present rate of progress it will take 50 years to complete the job, according to the U.S. Geological Survey.

However, USGS has hopes that the rate can be stepped up to finish the project in 20 years. After that, the work of revision to keep charts accurate and up-to-date will be relatively simple.

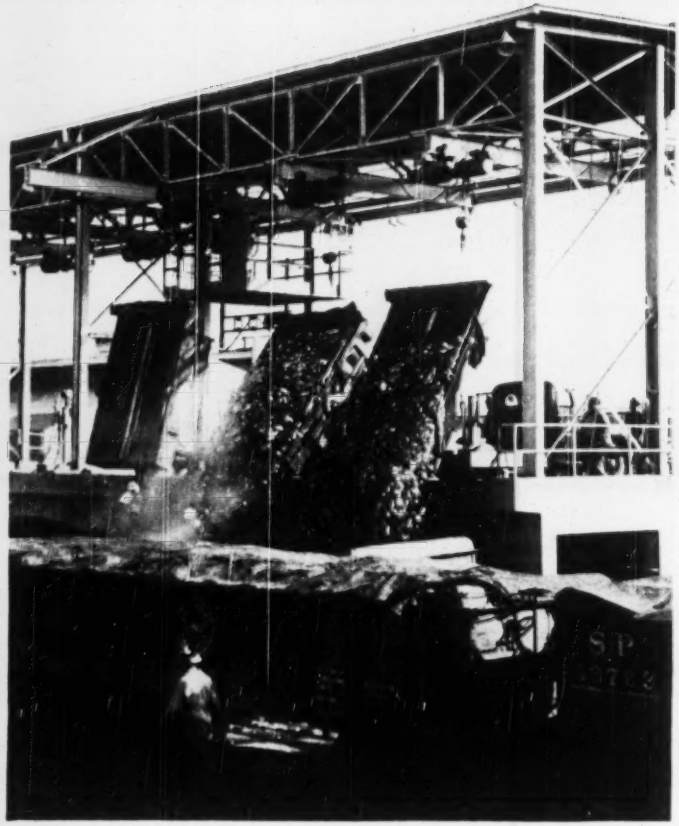
Cost is estimated at 25 cents per acre—nearly half a billion dollars to finish plotting the country's uncharted acres by 1970. USGS is quick to point out that this sum of money is but a fraction of one percent of the total to be spent on construction and development programs by federal and state governments in the same period. And the dollar savings credited to availability of good maps in construction work are inestimable.

Whether the project is done in 20 or 50 years hinges on finances. Money is not at present available. Current policy supposedly is based on the "Temple Act" passed by Congress in 1925. This act approved a program in principle, but the money to implement it has never been appropriated. The initial appropriation was to have been $1,000,000 back in 1925; the amount was then to increase yearly. Actually, funds directly appropriated for topographic mapping ten years later in 1935 totaled under $200,000—about the same amount spent in 1885.

Massachusetts and Rhode Island are the only two states adequately mapped, according to USGS. In other states, areas either have not yet been mapped, or the old maps available fail to meet present-day accuracy requirements. Some 2,000 quadrangles in the states, Alaska, Hawaii and Puerto Rico now are being mapped.

The obvious reason for Massachusetts' complete map coverage is the agreement it made with USGS back in 1884 to share costs of the work. Over half the states now have dollar-for-dollar arrangements for fostering USGS activities (ENR Aug. 11, 1949, p. 18).

World War II not only increased the government's need for accurate maps but also spurred a demand by the public. About 700,000 maps were sold in prewar 1940; last year USGS sold 3,000,000. And a number of prospective buyers had to be told the map they sought was not yet drawn.



GARBAGE TRUCKS dump into rail cars at Los Angeles' new garbage transfer yard. Truck drivers use electric hoists mounted on crane rail to dump their trucks. Tarpaulins cover filled gondola cars for trip to hog farm.

Elevated Platform Speeds Garbage Transfer

TRANSFER of hog-farm-destined garbage from collection trucks to rail cars is facilitated in Los Angeles by a new elevated platform. The new installation replace ground-level facilities and makes collection equipment simpler.

Under the system of refuse separation used in Los Angeles, householders, hotels, cafes, etc., keep garbage suitable for hog-farm use apart from other refuse. Cans, bottles and papers are collected separately.

Garbage from the central district (comprising 72 percent of the total load) is disposed of by contract to a farm feeding more than 50,000 hogs located some 50 miles east of the city (ENR Oct. 5, 1946, vol. p. 450). This involves from ten to thirteen railway cars a day or from 350 to 600 tons a day.

The new facilities will be used to transfer this garbage from collection trucks to rail cars. Previously, an overhead crane lifted the truck body completely off the truck and dumped the contents into gondola cars. The truck body was cleaned by hosing while being held by the crane.

With the new facilities, trucks will drive up a six-percent ramp and back over the gondolas. Contents will be dumped by an electric hoist mounted on a framework over the transfer platform. Six hoists are installed on the 141x88-ft platform and can be operated so that six trucks can be handled at once.

Two 15-ft 7-in. wide ramps (one up and one down) serve the 11-ft high platform. The 141-ft length of the platform is split up into the hoist shed (26 ft), ramp approaches (54 ft) and clear space for maneuvering and the necessary work of cleaning trucks (61 ft).

The structure is built of reinforced concrete and steel and there is a limited space made available under it for storing equipment.

Main advantage of the new transfer facility is more efficient operation. It also permits the use of enclosed bodies on collection trucks; this was not possible with the old method. Further, the trucks and the general area can be kept cleaner.

The collection equipment will be simpler; the trucks will have no self-contained hoists. A driver will be able to hook up one of the electric hoists to dump his truck load without depending on a crane operator for his service.

The new facilities are located on the east edge of the central district in the heart of the Los Angeles industrial area. This is significantly east of the center of garbage load. However, zoning restrictions and difficulty of acquiring property limited the platform location to a site adjacent to existing facilities.

An average of 56 trucks is used each day on the garbage haul to this central transfer station. Average haul is slightly more than two loads per day, each load about 6,000 lb. A nighttime shift of 15 additional trucks hauling three loads each adds to the total traffic.

There are three other garbage collection areas in Los Angeles. These outlying districts are in the San Fernando Valley (Valley District), west Los Angeles (Western District), and at the Port of Los Angeles (Harbor District). In each district, a disposal contractor receives garbage from a hopper at a city-owned transfer yard. He transports the garbage in truck and trailer units to his hog farm for disposal.

Garbage collection is done by the Los Angeles Board of Public Works, Bureau of Sanitation, under supervision of W. A. Schneider, waste disposal engineer. Grant H. Flint is refuse collection superintendent for the bureau.

Structural design of the new facilities described in the foregoing was performed by Carl B. Johnson and John K. Minasian, consulting engineers.

Cheap, Fast Ground Control

Trig-traverse gives third-order control points for aerial mappers, at 25-50 percent reduction from triangulation or ordinary traverse costs

Joseph G. Kelley

Chief Field Engineer, Aero Service Corporation Philadelphia, Pa.

THE TRIG-TRAVERSE METHOD, a modification of the subtense principle, will yield third-order horizontal control at 50 to 75 percent of the cost of ordinary third-order traverse or triangulation. These savings, as well as faster work, are effected through a reduction of the number of points required, plus a reduction in field party personnel. Moreover, with trig traverse, third-order vertical data can be obtained at an additional cost of only $1.50 per mile, since the stations are occupied for both horizontal and vertical control.

(In the subtense method, the distance between stations is the altitude of an isosceles triangle with a constant base that is defined by a fixed pair of targets at the forward station. The altitude (distance) is solved after theodolite observation of the apex angle, from the rear station.)

Trig-traverse was developed by Aero Service Corp. for its field survey staff. The method is used to establish the primary ground control for air maps.

Trig-traverse fulfills a need for a horizontal control method that occupies the gap between triangulation and traverse. Triangulation, to be extended, requires intervisibility of several points from any one station. In terrain with few open hilltops this usually demands extensive reconnaissance and the building of observing towers. Costs often become prohibitive if only third-order closures are required.

Over terrain unsuited for easy triangulation, transit and tape traverse usually is used for third-order horizontal control. But the location of traverse is limited by the difficulties of chaining, so traverse follows roads and highways wherever possible. Here, the roads' meanderings and traffic reduce the amount of traverse that can be run in a working day.

The use of the theodolite and subtense bar brings some reduction in control costs. But this method also is restricted by the meanderings of roads, offering merely an occasional easy stream or gully crossing that might not be possible by taping.

• Adaptation of Subtense Principle— In the trig-traverse method, the cotangent of the subtended angle is used to compute the distance of the subtended course. Here the base need not be set perpendicular to the course, but may be established at an angle more convenient for measurement (base angle is observed when instrument moves up from previous station). Instead of the short subtense bar, trig-traverse employs a standardized steel tape, expanding the base measurement up to 500 ft. This makes possible the spacing of stations at intervals of as much as two, three or five miles.

The drawing is a graphic comparison of trig-traverse and the older subtense method. The course length to be determined is indicated by the line AB. (Relative lengths are not shown, for these depend on the subtended angle in the case of the subtense bar and on the length of base and the subtended angle for trig traverse). For measurements of third order accuracy with the subtense bar, the course length AB cannot be greater than 500 ft. With the trig traverse method, using a 500-foot base, the course length can be increased up to 28,644 ft, still fulfilling third-order requirements.

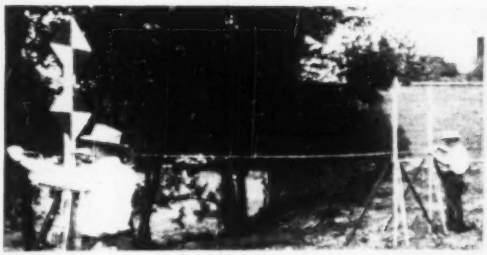
Since the trig-traverse bases (BD$_1$ and BD$_2$) cannot be measured as accurately as the subtense base, two bases are used. Field experience indicates that the value of the two-base system offsets to a great extent the slight inaccuracy of the base measurement.

Where length determinations are to be one part in 10,000, the ratio of the course length to base length is 20 to 1, so an error of .01 foot in the determination of the base would result in an error of .20 feet in the course. Base distances should be accurate, therefore, to less than .01 foot, preferably to .005 or closer.

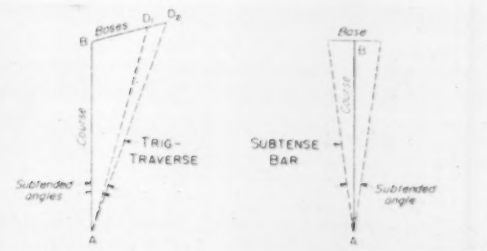
Through the two-base system, the effect of an error in base determination is reduced to about 0.7 of the effect of a single-base error. Furthermore, trig-traverse provides a check for any gross errors in the base measurement, since each base is measured separately and the distance D_1 to D_2 is measured for a check.

• Tapes, theodolites used — For the base measurements, use is made of steel tapes that have been compared with the national standard of lengths. A constant tension is applied to the tape to simplify corrections for tension and sag. For measurement of the distance subtense angles, a precise optical theodolite, reading to one second or less, is required. With this instrument, the base-length ratios can be used as a guide for closure errors.

Reasonable control over the accuracy of the distance measurements is exercised by limiting this ratio to



SURVEYORS MEASURE bases for trig-traverse. Double target is traverse station. Single targets establish separate base lines, for mutual checking.



COMPARISON OF METHODS—Non-perpendicular trig-traverse bases may be as long as 500 ft; courses two and more miles. Subtense bar length of two meters limits course to 500 ft.

TABLE I TRIG-TRAVERSE DISTANCE CHECKS

Course	Distance from Base B-D_1	Distance from Base B-D_2	Mean	Ratio of difference of mean and one length determination, to total length
37-38	4093.58	4093.63	4093.61	1:204,682
38-39	6162.42	6162.29	6162.35	1:101,038
39-40	990.93	990.96	990.95	1: 99,095
40-41	2316.93	2317.17	2317.05	1: 19,309
41-42	4312.11	4312.61	4312.36	1: 17,250

1:20. When the base ratio is 1:20, the angle subtended by the base is 2° 51' 45" or 10,305 seconds. Hence, an error of one second would result in an error of one part in 10,305 in length determination. (For small angles, cotangent varies as a straight line.)

Multiple readings substantially increase the degree of accuracy, but both field costs and computing costs mount with the increase in pointings. Under good lighting conditions and with a proper base-course ratio, only one set of pointings direct and one inverted are required.

Traverse angulation under the trig-traverse method is determined with the theodolite, which yields negligible errors in azimuth determination.

• **Base targets**—In field tests of trig traverse it was found that the base target must be designed for accurate reading and easy identification for both short and long courses. Differentiation of the station and base targets also must be readily apparent. The main station rod has two targets, and the base rods have single targets. All rods are four inches wide with a half-inch red center stripe. Centered within the red stripe is a sixteenth inch white stripe. This stripe may be used for pointings where the course is short, but its principal purpose is to establish the center of the rod for measurement of the base.

• **Office computations**—Office computations under the trig traverse method are somewhat burdensome, compared to transit and tape traverse computations. However, trig-traverse reduces the number of stations required so that the aggregate number of computations is less than that required by the older method. For example, recently 40 stations averaging one mile apart were required to complete the traverse between two U. S. Coast and Geodetic Survey triangulation stations. It is estimated that 60 miles of transit and tape traverse would be required to cover this, with an average of five stations per mile or a total of 300 stations.

To compute the trig traverse course, the first step is the reduction of the measured base length to its true horizontal length. Corrections are made for tension, temperature, slope, and slope modification for the tension. Then the length of the course is computed. The base-length component that is perpendicular to the course is computed from the known angle between the base and the course and from the measured length of the base. This component of the base multiplied by the cotangent of the subtended angle, determines the greater part of the length of the course. To this is added or subtracted the component of the base which falls within the course or the course extended.

Two independent lengths are computed for each course, one from each base. The final length of the course is the mean of the two computed lengths. A comparison of the two lengths obtained is a check of the reliability of the length determination.

Some examples of the distances obtained on a survey in Maryland are given in Table I.

Although these length determinations do not represent a comparison to an absolute length, they do indicate a high order of consistency on the part of the observer. These length determinations have been extracted from a 17-mi traverse which closed one part in 42,005.

• **Accuracy of trig-traverse**—Only third-order accuracy—one part in 5,000—is claimed for the trig-traverse method. However, most closures are of a higher order. In Aero Service's experience, mere third-order closures have indicated an error in the work. The bulk of our closures fall around one part in 20,000, with a substantial percentage of closures of a higher order. The traverse is helped by the accurate azimuth determinations with the theodolite, accounting to some extent for the excellent results. Representative closures, from a recent trig traverse in Maryland are given in Table II.

• **Vertical control by trig-traverse**—Since the trig traverse station must be occupied for horizontal control, the vertical angle to the next station can be determined at the same time and bench levels of third order accuracy established between stations. With optical theodolites, determination of vertical angles can be held within two seconds, one second of error attributable to the pointing, and another to error in centering the collimation level.

Multiple readings are made with two vertical targets, giving a check on the accuracy of each determination of difference in elevation. Observation of two targets also permits use of different parts of the micrometer, compensating to some extent for any irregularity in micrometer divisions.

Reciprocal observations from each station are necessary to minimize refraction errors. Vertical refractions vary with atmospheric conditions and time of day, so these reciprocal observations are made within the shortest time possible on the same day, and observations are not made during the sunrise or sunset hours.

In the field we make two independent angular measurements direct with the precision theodolite, and two inverted, for each of the two targets, eight pointings in one direction.

In computing the elevation difference, an arbitrary refraction constant is applied to the vertical angle. Though this can be omitted, it checks the reciprocal observations.

Consistent, accurate closing errors are the final criterion of vertical closures. With the best observers, these average .01 foot per mile. The elevation closures in a recent Maryland survey are given in Table III.

TABLE II—TRIG-TRAVERSE CLOSURES

USC&GS triangulation stations	Length of traverse	Closure
Marpen to Marpen	64.037 ft.	1:27130
Marpen to Penmar	87,791 ft.	1:42005
Penmar to Beacon #10	44,037 ft.	1:15291

TABLE III—VERTICAL-CONTROL CLOSURES

Bench Mark	Length-mi	Total closing error	Error per mile
Marpen-Marpen	12.1	0.035	0.0029
Sta-38EOM	2.0	0.031	0.0155
38EOM-TBM1252.7	18.0	0.103	0.0057

New Warren trusses will replace these 60-yr old Whipple trusses in . . .

I.C.R.R.'s Bridge Modernization at Cairo

ONE OF THE BIGGEST bridge-replacement jobs in the country is underway at Cairo, Ill., where the Illinois Central R. R. is modernizing its 60-yr old single-track bridge over the Ohio River. The project is an ambitious one—involving 2 mi of new superstructure, three new open-caisson shore piers and the concrete encasement of three river piers; at a total cost of about $6,400,000.

Disregarding the magnitude of the construction job, however, the fact that the bridge must be renewed with a minimum interruption of train traffic will complicate erection problems and rate the project high in the annals of unique bridge reconstruction.

• **Old Whipple Trusses**—The present bridge contains two 518-ft and seven 400-ft through Whipple truss spans on stone masonry piers—all constructed between 1887 and 1889. Approaches were rebuilt in 1935, and now consist of two 254-ft deck truss spans and steel viaduct construction.

The approach spans will remain intact, but the nine old truss spans will be removed. The two 518-ft and four of the 400-ft Whipple truss spans will be replaced with through-type Warren trusses of the same span lengths.

For economic reasons, however, it was decided to replace the remaining three Whipple truss spans—located over shallow water on the east river bank—with six 200-ft deck-type Warren trusses. This calls for the construction of three new piers and the modification of four existing piers.

• **Erection Details**—Erection details have not been fully developed but the general plan will be to erect the new spans complete with open-type steel deck, ties and rails, on steel falsework adjacent to the old spans. After each span has been completed, the existing span will be rolled out of the way onto steel falsework and the new one moved into final position. The old span then will be dismantled and removed.

It will be necessary during the movement of each span, out and in, to detour railroad traffic, both Illinois Central and Gulf Mobile and Ohio R.R., which share the track.

Substructure construction is now underway, and erection of steel falsework is expected to be started by next June 1. Superstructure erection will start at the Illinois side and proceed easterly across the river.

• **Contractors and Engineers**—The Kansas City Bridge Co. and Massman Construction Co. are doing the substructure construction, as joint venturers. The American Bridge Co. has a contract for dismantling the old truss spans, and furnishing and erecting the new ones.

C. H. Mottier is vice president and chief engineer for the Illinois Central, and M. Block is engineer of bridges. Modjeski and Masters are consulting engineers on the project.

Are Toll Roads the Only

• Here is a plan for financing badly-needed highways that claims many advantages over toll financing, including large savings in costs. It was proposed by the late L. I. Hewes, chief, Western Headquarters, Bureau of Public Roads, who wrote this outline for Engineering News-Record shortly before his sudden death March 2.

INCREASING MOTOR TRAFFIC has created a capacity demand for highway service that is not being supplied. This unsatisfied traffic demand is concentrated on a limited mileage. It is, however, a critical demand. It becomes increasingly intense as traffic exceeds the practical capacity of the highways involved, and it also involves continuing economic loss.

Confronted with this acute traffic situation, highway officials explain that under prevailing formulas or policies for allocating highway funds it is impossible to concentrate sufficient money fast enough to relieve the unsatisfied demand on critical sections.

This explanation of the situation, however honest, in most cases is neither complete nor sufficient. It fails to recognize correlation of the needed plant extension and its potential earning power.

Today highway funds are largely the state-collected highway user revenues—principally gasoline taxes and license fees. They are admittedly in general inadequate even for the immediate state highway needs. Indeed at current levels in some states they cannot pay for correcting the urgent deficiencies. These deficits have been sufficiently developed by the state-wide investigations and reports for seven states by the Automotive Safety Foundation. These reports, however, do not suggest measures of raising new funds.

This situation arises partly because the current operating income level is too low. It cannot meet the new needs. Highways are subject to a state-wide vehicle-mile toll—a composite vehicle-mile yield that when integrated over the system's mileage produces the state user fund. Too often the allocation of this fund to area, systems or projects is faulty. But most important is the demonstrated impossibility of replacing and enlarging the highway plant with the use of current annual revenues only.

It is not impossible to increase these annual operating revenues. It doubtless would be an economy to do it because that would save the uncounted millions of excess operation costs and intangible losses. The present allocation defects possibly then could be corrected. The highest revenue-producing routes then could be built faster and meet unsatisfied traffic demand.

But a fundamental reason for our present lack of balance between highway demand and supply is our inability to replace and enlarge the plant with annual operating income.

• Small mileage needs improvement—Yet the most needed plant development—the mileage that would satisfy the most urgent traffic demands—is quite small. In most states it is less than 10 percent of the primary federal-aid system and its urban extensions—in some states less than five percent.

This is the mileage that carries 3,000 to 4,000 vehicles daily. Where it extends between or into large cities it may carry several times this average traffic—possibly 40,000 or more.

Defective financing of this mileage stems from failure to classify the state systems with respect to actual or potential earning power. But even with admitted vast needs by a limited mileage with high earnings, opposition to concentrations of state-wide annual revenue would likely have prevailed. It is doubtful if a general increased gas tax, earmarked for such needs, could pass the voters. The local roads would have to come in.

• Earnings in taxes are ample—What then is possible? The situation is paralleled to many big business problems. The initial movement of 45 million motor vehicles in this country is producing currently over 400 billion vehicle-miles. This astounding business is earning in taxes (tolls?) at least six mills per vehicle-mile. The business implications are challenging. Can we borrow capital to develop this business in its most profitable divisions?

The cost of ample, safe four-line highways now ranges from $350,000 to $1,500,000 per mile including necessary rights-of-way. It runs even higher in large metropolitan areas. To borrow funds for such corresponding capital improvements the annual debt service money should be in evidence for say 20 to 30 years. Is such money in evidence?

The total earnings of traffic per *vehicle-mile* in the form of highway user revenue varies from state to state, principally because of variation in the "gas tax." It may be established closely for a given year because we now have data to compute and check the total vehicle-miles and the total revenue. Thus in 1940 the average vehicle-mile revenue from state motor vehicle imposts in the 11 far-western states was $0.0044, and with federal imposts and state motor sales taxes included it was $0.0065. The corresponding nation-wide figures then were $0.0048 and $0.0067, respectively. In 1947 these figures jumped to a nation-wide average of $0.0050, and with federal imposts (and state motor sales taxes) added to about $0.0084. In some states this (1947) vehicle-mile revenue exceeded 9 mills.

Is there then a favorable relation between the total vehicle-mile revenue on some highway routes and the cost of those routes? Are they solvent? Will their contributed share to the total state-wide user revenue pay for borrowed capital for their development?

The limited access freeway between Pasadena and Los Angeles initially carried about 25,000 average daily traffic. It cost (in 1940) including right-of-way, about $800,000 per mile. At a vehicle-mile revenue of only 5 mills it could have paid at once 5.7 percent of the initial cost. In 1949 the traffic was about double the above figure and its average revenue per vehicle-mile was increased so that the business income was above 12 percent of the initial cost. And the eight-line extension deeper into Los Angeles now carries about 80,000 vehicles per day.

Not all miles of urgently needed highways or highways on which there is an unsatisfied traffic demand would be solvent, yet many projects like California's Arroyo Seco would earn a

Answer?

When highway-user payments are apportioned to the highways of a state on a vehicle-mile basis, the return on the investment for a densely traveled route is high.

If states in need of money to enlarge or rebuild such heavily traveled roads would segregate but a part of this revenue the total would be adequate to finance a bond issue large enough to do the work without detriment to the normal road operations in other parts of the state where traffic is less dense.

handsome surplus. Such solvent projects manifestly could be financed with borrowed funds—bond issues with the operating revenue pledged for debt service.

• **No tax increase needed**—Suppose then there are in a state's primary system, of say 8,500 miles, 10 percent or 850 miles of routes with unsatisfied traffic demand—inadequate capacity. As stated, the existing traffic on present miles then will probably range from 3,500 to 40,000 average daily traffic or more. It will likely be increasing. What is the correlation of the state operating revenue on these highways and their cost? At 6 mills per vehicle-mile the annual revenue per mile is $2,190 per 1,000 average daily traffic. So in this hypothetical group it runs from say $7,665 to ten times that sum, or $76,650. With no change in impost rates these annual revenues will increase with traffic—possibly 5 percent per year in some cases.

If it is safe to capitalize these annual revenues at 5 percent in the face of the potential business we can afford improvements costly roughly from $153,300 to $1,533,000 per mile—paid for immediately with borrowed funds. If a 4 percent rate is used the corresponding permissible mile average costs of improvement of the group mileage could be in excess of $1,000,000.

Not every one of the presumed 850 miles nor every individual project or route will produce sufficient operating revenue for the corresponding debt service. But some projects will produce a handsome surplus. The selection or classification of a group or set of projects that are solvent as a whole is thus obviously possible.

Of course legislation would be needed. It could provide that annual revenue from the group of carefully selected routes or projects should be earmarked for use only as needed to service bond issues; that the earmarked revenue should always be sufficient for the debt service existing and/or proposed; that revenues unneeded for debt service should revert to the state user fund; and that for ample security only say 80 percent of known revenues from the selected mileage could be applied to debt service. Also there should be provision that allocations of state-wide user funds should debit corresponding amounts to areas for which bonds were issued.

• **Toll roads as an expedient**—In the absence of any such classification and corresponding legislation to permit state highway authorities to manage their huge and increasing business along modern capitalistic lines there has been resort to the long since discarded toll system. Existing state taxes are still to be paid, but for satisfying the acute traffic demand there is to be an extra fare. The plan for toll roads is to make them solvent even if solvency must be dependent on a sufficient toll rate upward from one cent per vehicle mile on only part of the potential traffic.

The plan is not always easy. Toll roads are expensive. They must be of the very best standard of alignment and cross section. They must be protected from trespassing traffic by expensive grade separations. They must have toll stations. Their maintenance cannot lag. Nevertheless some of them are collecting ample revenue. The preferred ones have monopoly. Examples are the San Francisco Bay Bridge and the Lake Washington floating bridge at Seattle (which now is free).

It was undoubtedly good business to borrow money to build these monopoly toll projects, and it still will be for similar short expensive toll projects. However, all toll roads are not monopoly projects. They are dependent solely on their own revenue; generally it can be collected from only a fraction of the potential traffic. Thus their relative costliness is increased.

Not all this short trip business that can and will pay the "extra fare" can be secured—it is too costly to build the necessary toll interchanges. There usually are alternate free routes. These free routes still will be used because the toll charge is a deterrent to the use of the toll facility. The financing terms must reflect the classification of the security. They can scarcely compete with state-sanctioned bond issues above described.

• **Little opposition foreseen**—Under the suggested plan of financing by segregating a solvent group of routes free to borrow against their own revenues there scarcely can be complaint from other sections of a state. Obviously the preferred routes (and the corresponding allocation areas) are to have only four or five percent annually of the cost of their most needed improvements and extensions. Certainly no section of any state can legitimately complain if enough operating earnings or state user revenue is annually allotted (frozen) so that financing a much needed project could be completed in 20 to 30 years, even if a bonus for interest must be paid.

This theory of bonding a solvent group of state routes for their improvement would not apply in all states. It should be possible in states that have as a whole a solvent state highway system.

In states where the urgent traffic demand exists there is prima facie evidence of solvency if the user income is reasonably adjusted.

So far there has been mentioned federal excise taxes only as a fraction of road earnings. But federal funds also are available for arterial road construction. The American Association of State Highway Officials at its Chicago meeting in November, 1949, recommended a $210 million annual federal fund for improvement of the interstate system. It is mostly parts of this system—particularly urban parts—that we have been discussing. Thus the soundness of borrowed funds is underscored by federal aid.

Not only is it underscored, but the AASHO concurred in the recommendation of the report "Highway Needs of the National Defense" that federal funds allocated to the states for the interstate system could be utilized for principal payments on bonds issued for that system, although not for interest payments on such bonds.

We have the needed techniques to determine good traffic figures. We know the urgent projects. We know the annual revenues. The suggested borrowings under this group earnings plan is feasible and clearly should offer sound investment. What remains to be done is a good selling job to the state legislatures. To that end it is to be observed that in many states early bond issues really put the state in business. California with early bond issues totalling $73 million and with user revenue in 1948 of more than $224 million is an example.

Small dam in rough, mountainous region gets . . .

Construction Materials by Airlift

Seven 170 tons of material and equipment were delivered by air last fall to the site of a small storage dam on the headwaters of Capilano River, a principal source of water supply for Vancouver, B. C. The site is 15 miles north of Burrard Inlet in a region so rough that an access road was out of the question.

This situation put special limitations on design (particularly in keeping to a minimum the tonnage of materials to be flown in) and completion of the project provided useful data on methods and costs incidental to air delivery by helicopter in rough terrain. Information on both these subjects was obtained from E. A. Cleveland, chief commissioner Greater Vancouver Water District, under whose direction work in the field was supervised by C. M. Gilbert.

The new dam is located in a rock gorge 50 ft deep and 40 ft wide at El 3,000. At this spot a dam 27½ ft high increases storage capacity of a natural 125-acre lake enough to smooth out runoff peaks from the 570-acre watershed so that 24-hour rainfall intensities govern rather than those figured for 15-min periods. As a conservative estimate, a 24-hour rainfall of 1.5 in. with a 100% runoff was used in figuring spillway capacity.

Release of storage water from the lake into Capilano River and thence to Capilano intake in the city's water system is made by means of a tunnel drilled in 1926 through the solid rock rim enclosing the lake. The effective storage depth of the lake prior to construction of the dam was 131 ft. The dam increase effective storage depth to 154 ft and the storage by some 3,500 acre-ft. The additional water will cost the district only about 4¢ per 1,000 gal during the expected life of the dam.

• **Design considerations**—Design of the dam had to make allowance for the fact that there will be long intervals between expert inspection and that severe ice conditions can be expected. To allow ice to ride up the face instead of exerting a horizontal force, a sloping upstream surface was necessary. A thin reinforced concrete structure was ruled out by reason of the low temperatures.

Early in the study, a rock fill type seemed preferable and this was confirmed when it developed that the considerable excavation required for the spillway would be made close to the damsite, and the excavation would supply just about enough material for the fill.

Spillway capacity of 390 cu ft could be provided by an excavation of about 1,500 cu yd which, it was figured, would amount to some 2,200 cu yd as loose fill in the dam. This amount of materials would provide a dam 10 ft wide at the crest with a 2 to 1 downstream slope and a 1½ to 1 upstream slope. This upstream slope was found to be the average natural slope of this material in dumped fill; any flatter slope would have undesirably increased the concrete required for the upstream seal or paved surface of the fill.

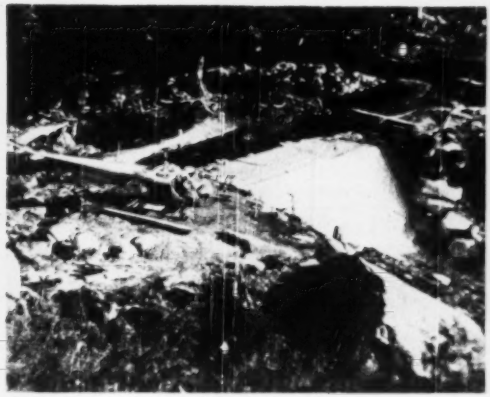
Sealing the upstream face was decided upon in preference to a central core wall because (a) no formwork would be necessary, (b) a center core wall would call for very careful placing of the adjacent rock and (c) a seal on the upstream face would be readily accessible should subsequent repairs be needed. Principal disadvantage was that settlement of the fill might cause cracking. However, to minimize risk of settling, specifications called for thoroughly sluicing the fill as it progressed to wash out smaller particles.

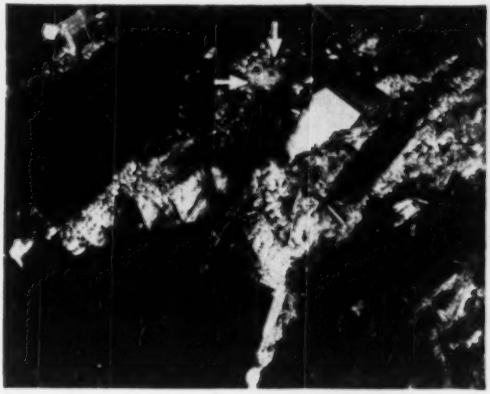
TABLE 1—MATERIALS DELIVERED

Materials	Pounds
Sand and gravel	225,000
Cement	48,000
Reinforcing steel	6,000
Lumber	22,000
Food	6,000
Winch and cableway	3,000
Tools, equipment and miscel	25,000
Fixtures and incidentals	5,000
Total	340,000

• **Constructing the rock fill**—After the rock gorge had been cleared of rubble and sluiced with a high-pressure water jet the fill was placed by hand, using only the blasted rock. Rock was delivered on skips brought to the dam by an overhead cableway built across the gorge on the dam axis. Rock sizes ranged from 4 or 5 lb up to 2 or 3 tons. Care was taken to keep out small rock fragments and dirt. In final rock placement, both up- and downstream faces were riprapped 15 in. deep.

Upper face and crest were surfaced





LANDING AREA 15 ft square is used by helicopter alongside partly completed dam. Picture at right is pilot's eye view as aircraft approaches the tiny "landing field" marked by arrows.

with concrete having a minimum thickness of 6 in. and containing ½ in. deformed reinforcing steel bars on 6½-in. centers both ways. Steel was placed 2½ in. from the upper face of the concrete. Before the concrete was poured a key 18 in. wide was blasted into the rock where the paving would intersect walls and bottom of the gorge, thus providing a thickened concrete section around sides and bottom of the slab.

Concrete was placed at the rate of one 10-ft zone per day, taking 4 days for the face and half a day for the crest. No forms were used. The surface was float finished and after setting, two coats of white waterproof cement were brushed on to seal the pores.

• **Airlift operation**—In planning for delivery of material to the remote damsite it was found that a rough jeep road, built for use in transmission line construction, would be available to a point 7 miles, by trail, from the damsite. These 7 miles of trail traverse dense forests, deep canyons, precipitous slopes and in the last 3,000 ft make an ascent of some 1,400 ft. Cost of an access road would be prohibitive.

Even construction of a suitable landing spot for a helicopter at the damsite presented problems. Landings would have to be very close to the damsite to facilitate handling materials. Because of varying winds it was necessary to provide for approaches from two directions, and a minimum area was important because leveling any spot near the dam would require blasting out solid rock. The original landing area was 10x12 ft in size and was located 20 ft to the west of the gorge near the dam center line. This "best location" was in a spot where the ground sloped away steeply on two sides and was barely more than an easement between precipitous slopes both up and down. After the first few days of flying the pilot complained that the landing area was too small and it was accordingly enlarged to about 15 ft square. Three intermediate landing fields were provided by making clearings along the route of flight which had a length of 5 air miles between the damsite and the starting point on the jeep road.

The helicopter had a lifting capacity of 400 lb, but this weight had to be distributed evenly in order not to impair stability. Ordinarily the maximum load on one side of the helicopter was 200 lb and this had to be balanced by another equal load on the opposite side. A 1,600-lb hoisting engine was stripped of all non-essential parts and dismantled, after which it was moved to the dam in three trips. Even the 6x6-in. skids for the cableway winch, which were 14 ft long, were taken in by the helicopter. This length was the maximum considered safe for attaching to the aircraft.

The 300-ft length of ¾-in. wire rope to be used as a cableway weighed 400 lb, but by rolling it in two coils with 6 ft of slack between them it was possible to load one coil on each side with the slack passing beneath the helicopter.

A more difficult load was the 410-lb bottom half of the bowl of a 5-cu ft concrete mixer. This item, of heavy cast construction, was 4 ft in diameter and about 14 in. high. Before it could be attached to the underside of the aircraft it was necessary to dig a hole in the middle of the take-off area. From this position the load was suspended directly below the axis of the rotor blades and hence under the center of gravity of the helicopter. In preparation for receiving this load at the damsite, a similar hole was blasted in the center of the damsite landing field. When the helicopter settled down with this load four men were ready to guide the hovering aircraft so that the bowl could be delivered exactly into the depression prepared for it.

Major difficulty with the air lift was unfavorable flying weather. There was one 2-week period when rain was continuous and clouds shrouded the damsite nearly all day, sometimes lifting only enough for one or two trips in the late evening. Despite this the work was never shut down because of material shortage. Construction was completed before the fall freeze-up and in time to catch the succeeding runoff.

Despite very turbulent air and down drafts from the mountains, there were no serious accidents in well over 300 hours' flying time, during which there were some 2,000 takeoffs and landings at both ends of the run. Costs, quantity and kinds of freight delivered in the 5-mile air haul as well as costs per pound are given in the accompanying tables.

TABLE II—HELICOPTER FLYING TIME AND COSTS

Period	Cost per hr (dollars)	Total Cost (dollars)	Flying Time (hr)	Weight Delivered (lb)	Delivery Cost per lb. (cents)
Oct '48–Nov '48	80	3,800	47½	35,000	10.85
July '49–Oct '49	60	16,770	279½	305,600	5.5

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READER COMMENT

Partial Prestressing Explained

Sir: On Nov. 3, ENR kindly reviewed the English edition of my book on "Prestressed Concrete." (An American edition of this in the meantime has been published by Frederick Ungar Co., New York). However, from the remarks on "partial" prestressing and non-bonded wires I have the impression that the reviewer has misunderstood my views on these points.

With partial prestressing, the concrete need not be "permitted to crack" nor would it happen that "its *ability* to act under design loads as an homogeneous elastic material would be lost," as stated in the review. With partial prestressing, either complete absence of cracking under design load may be ensured, or in special cases, when the full design load occurs only very—rarely, absence of cracks and homogeneous behaviour may be obtained at ordinary loading. In the event of the maximum design load occurring, instantaneous fine cracks may be allowed to develop; but these cracks will close immediately when the load is reduced, and the beam will then act homogeneously as before.

A number of bridges with partially prestressed beams are being built by British Railways Eastern Region. Full absence of cracks under design load is obtained. (CIVIL ENGINEERING & PUBLIC WORKS REVIEW, Oct. 1949). Five bridges were built according to this description in 1949, and a number of other similar bridges are being built this year. They are a combination of prestressed, prefabricated concrete beams and concrete filling, forming composite members. The prestressed concrete beams contain tensioned and untensioned high-strength wires.

Recently a composite bridge beam with 60% of the tensile reinforcement tensioned and 40% untensioned was tested to a loading at which the average stress in the tensioned and untensioned wires calculated for a cracked section was equal to 96% of the tensile strength of the wire. When this loading was reached and then immediately removed, all cracks closed entirely and no permanent deflection remained. This proves the extraordinary behaviour of such a composite construction in which both prestressed and added concrete, with tensioned and untensioned wires, fully co-operate.

The particular advantage of partial prestressing is the possibility of reduction in construction depth with resulting economy, since it is obviously cheaper to have a part of the reinforcement untensioned, i.e. without special anchorages, than the whole reinforcement tensioned. Full absence of cracking can be ensured if the tensile stress does not exceed 0.75 of the modulus of rupture of the concrete section with sustained loading and 0.5 of the modulus of rupture if fatigue due to repeated loading occurs. Only when considerable impact takes place is it advisable to further reduce this tensile stress. On the other hand, when the maximum loading occurs only very rarely, it would be of little harm if instantaneous minute cracks develop.

The second point in the review, relating to non-bonded wires, states that I prefer bonded (pretensioned) wires. However, on p. 96 of my book I have clearly stated in the conclusions "that there is very little to choose between them" (i.e. pretensioning and post-tensioning) "provided a sufficient adherence is ensured with pretensioning by suitable choice of diameter and surface property of the wire, and additional bond is ensured with post-tensioning".

It would appear that the beneficial influence of bond upon ultimate strength has not yet been recognized in the United States, but tests have conclusively proved that the ultimate load is much lower and the deflection greatly increased if the wire is non-bonded and elongates excessively over its full length. If the initial prestress is about 70% of tensile strength of the wire, the ultimate resistance of under-reinforced beams, which mainly occur in prestressed concrete, will be reduced to, say, 80%. With lower initial stress, this reduction may be even greater.

P.W. ABELES
Consulting Engineer
London, England

Correction

Sir: There is an error in the article, "How to Blend Aggregates to Meet Specifications," in the Jan. 5 issue. In Table I the grading for Aggregate A should read "Larger than 1 in., 5%; 1 in. to #4, 74%." In the table illustrating the method of checking by trial, the grading of Aggregate A is shown correctly as 95% 1 in. And, working from Table II, the error does not affect the demonstration of the method.

GEORGE F. DRISCOLL
Assistant Professor
University of Notre Dame

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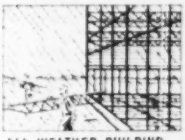

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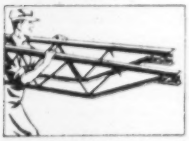

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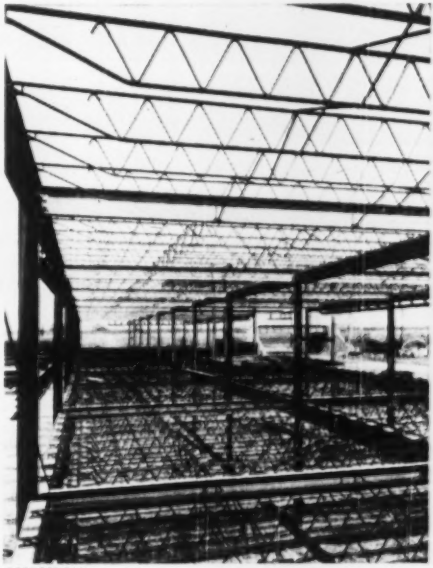

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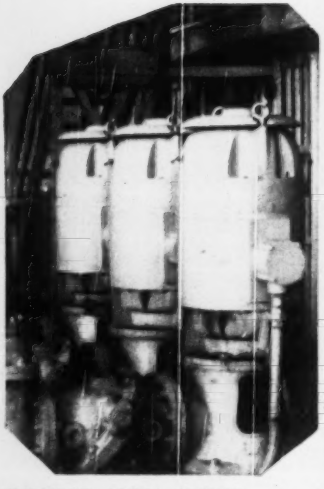

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FIELD AND OFFICE

Contractor Buys Movable Town for Construction Workers

A "70" building" town for construction workers grew up overnight at the site of Garrison Dam, 75 miles northwest of Bismarck, N. D., recently.

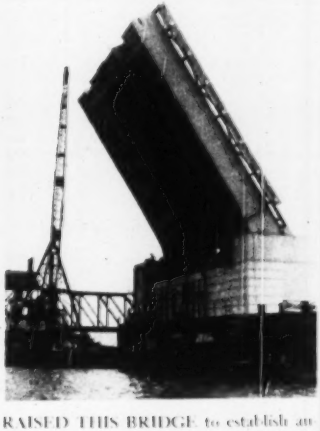
Units of the town were seventy 33-ft., 3-room trailer coaches, purchased by the contractor—S. A. Healy Company and the Material Service Corporation — from the Travelite Trailer Company of Chicago.

The trailers arrived on the scene fully equipped and furnished, wheeled into place, connected to water, electricity and sewerage, and the overnight town was ready for occupancy.

The town now has streets, laundry and utility buildings and a recreation center.

PNEUMATIC REAMER OPERATES BASCULE BRIDGE

THIS LITTLE AIR MOTOR saved bridge builders a lot of hand work during erection of the superstructure for Washington, D. C.'s new 14th St. Potomac River Bridge. The bridge's bascule span was erected in the down position, river traffic being diverted through a span not yet placed. When the bascule structure was complete, except for electric motors, contractors wanted to get going on the unfinished span so they . . .



RAISED THIS BRIDGE to establish another passage for river traffic. They did it with hand-cranking mechanism which already was operable. Actual manual operation would have been slow and laborious, so they attached a pneumatic reamer to the crank shaft. The little machine could raise or lower the bascule leaf in four minutes—E. E. Howard, Howard, Needles, Tammen and Bergendoff, Kansas City, Mo.

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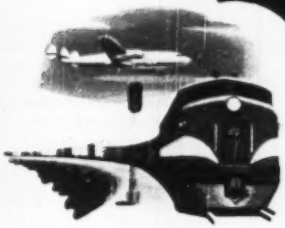
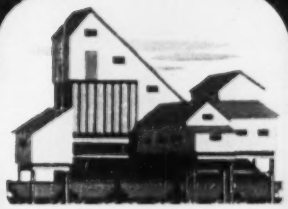
LOGGING



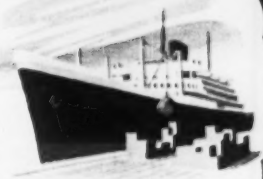
TRANSPORTATION



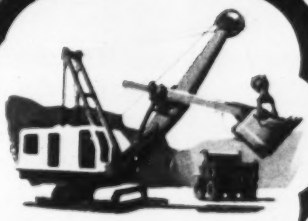
MINING

PETROLEUM

MANUFACTURING

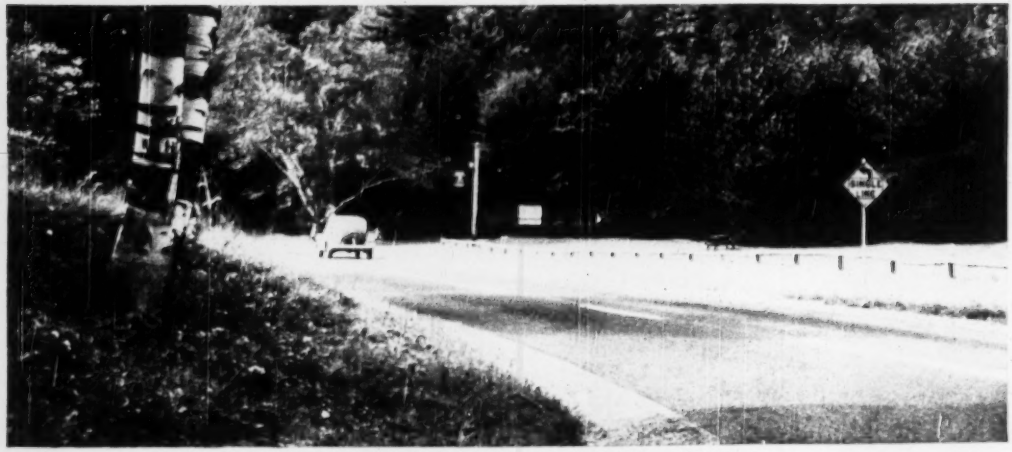


MARINE



CONSTRUCTION

A GOOD RIDE (ROAD) IN ANY WEATHER



In Summer, roads built with Tarvia* road tar are easy on the eyes, and easy to ride on. Their smooth, non-glare surface blends with any landscape—takes the strain out of motoring.

In Winter, roads built with Tarvia* road tar are easier to keep clear because their granular, black surface absorbs heat and facilitates snow removal. Moreover, Tarvia* road tar is not affected by calcium chloride or sodium chloride.

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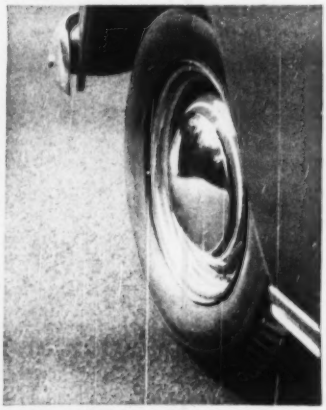

Roads built with Tarvia* road tar have a slightly granular, "tractionized" surface which gives tires a better grip—even under unfavorable driving conditions.

Barrett Tarvia* ROAD TAR

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Reports and Pamphlets

FIFTH INTERNATIONAL CONFERENCE OF SHIP TANK SUPERINTENDENTS (London, 14-17 September, 1948)—His Majesty's Stationery Office, London. Price 7s. 6d.

SURVEY OF CLASSIFICATION AND ALLOCATION OF ENGINEERING AND CLOSELY ALLIED POSITIONS UNDER JURISDICTION OF THE OFFICE PERSONNEL, NOVEMBER 1948-APRIL 1949—By Allen P. Richmond, Jr. Government of Puerto Rico, San Juan, P. R.

GRATE INLETS FOR SURFACE DRAINAGE OF STREETS AND HIGHWAYS—By Curtis E. Larson and Lorenz G. Straub. Bulletin No. 2. St. Anthony Falls Hydraulic Laboratory, Minneapolis, Minn.

ANALYTICAL CALCULATION OF ANISOTROPIC CIRCULAR CYLINDRICAL SHELLS—Bulletin No. 43. Christiani & Nielsen, Copenhagen, Norway.

DEVELOPMENT OF FLUIDITY AND MOBILITY METERS FOR CONCRETE CONSISTENCY TESTS—By Anders G. Eriksson. Swedish Cement and Concrete Research Institute, Royal Institute of Technology, Stockholm.

STRAKENBRUCKEN, TEIL II—STAHLERNE STRAKENBRUCKEN—By Kurt Leiser. Wilhelm Ernst & Sohn, Berlin, Germany. 20 DM.

MAUERWERK, WIDERLAGER, PFEILER UND GESTALTUNG VON BRUCKEN—By Gottwalt Schaper. Wilhelm Ernst & Sohn, Berlin, Germany. 13 DM.

DIE PLASTIZITATSTHEORIE IM STAHLBETONBAU—By Franz Gebauer. Georg Fromme & Co., Wien, Austria. $4.50.

PROCEEDINGS OF THE TWENTY-THIRD ANNUAL SHORT COURSE IN HIGHWAY ENGINEERING—Bulletin No. 112. Texas Engineering Experiment Station, College Station, Texas.

WIND EFFECT ON LAKES AND RIVERS—By B. Hellstrom. No. 156. Proceedings of the Royal Swedish Institute for Engineering Research, Stockholm, Sweden.

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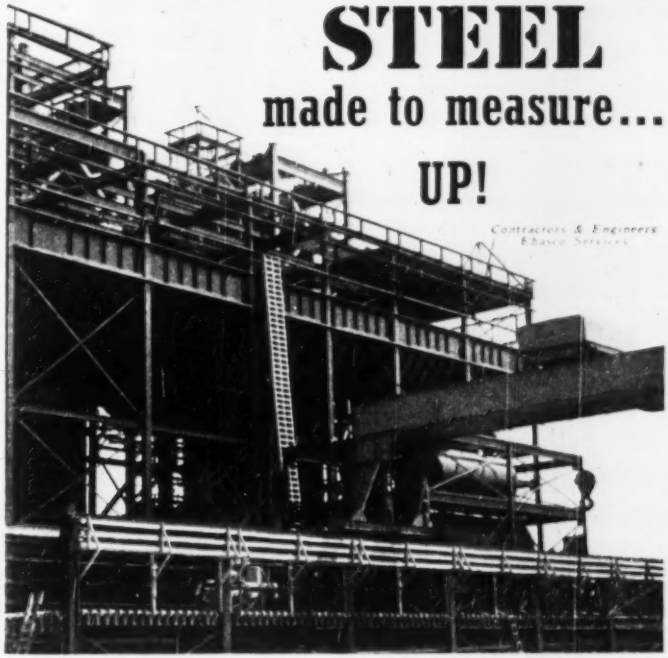
MASTER SPECIFICATIONS FOR COPPER ROOFING AND SHEET METAL WORK IN BUILDING CONSTRUCTION — INSTITUTIONAL, COMMERCIAL, INDUSTRIAL — Revised edition. Revere Copper and



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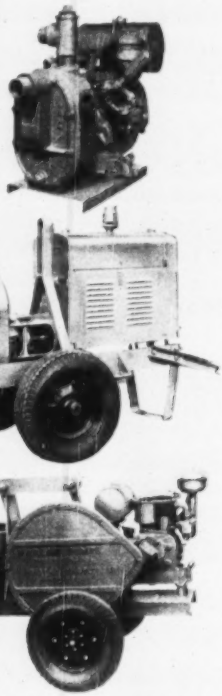

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Brass, Inc., 230 Park Ave., New York, N. Y.

A Plan of Highways for Passaic County—Passaic County Planning Board, Paterson, N. J.

Interior Wiring Design for Commercial Buildings—The American Institute of Electrical Engineers, 33 W. 39th St., New York 18.

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Der Stahlhochbau—Band I. By Baurat C. Kersten. 234 pp. Wilhelm Ernst & Sohn, Berlin, Germany. Price 14 DM.

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Stahlerne Brucken—Band I. By Gottwalt Schaper. Wilhelm Ernst & Sohn, Berlin, Germany. Price 15 DM.

Der Haken im Stahlbetonbau—By Reinhard Bauer. Wilhelm Ernst & Sohn, Berlin, Germany. Price 2.60 DM.

Lehrbuch fur Betonbauer—By Hans Rueth. Wilhelm Ernst & Sohn, Berlin, Germany. Price 4.80 DM.

Die Clapeyronsche Gleichung als Grundlage der Rahmenberechnung—By Georg Ehlers. Wilhelm Ernst & Sohn, Berlin, Germany. Price 4.80 DM.

Bemessungstafeln fur Holzbauten—By Anton Gattnar. Wilhelm Ernst & Sohn, Berlin, Germany. Price 7 DM.

Lighting for Woolen Mills and Lighting for Canneries—Reprints from "Illuminating Engineering." Illuminating Engineering Society, 51 Madison Ave., New York 10. Price 50¢ each.

Construction: The Bonded Contract is the Owner's Protection—The Surety Association of America, 60 John St., New York, N. Y.

Safety Code for Manlifts—The American Society of Mechanical Engineers, 29 W. 39th St., New York 18.

Standard Filing System and Alphabetical Index—For filing information on the materials, appliances, and equipment employed in construction and related activities. The American Institute of Architects, 1741 New York Ave., N.W., Washington 6, D. C. $2.00

Zoning and Civic Development—Construction and Civic Development Dept., Chamber of Commerce of the U. S., Washington 6, D. C.

Investigation of Wheel Load Stresses in Concrete Pavements—Swedish

(Continued on page 54)

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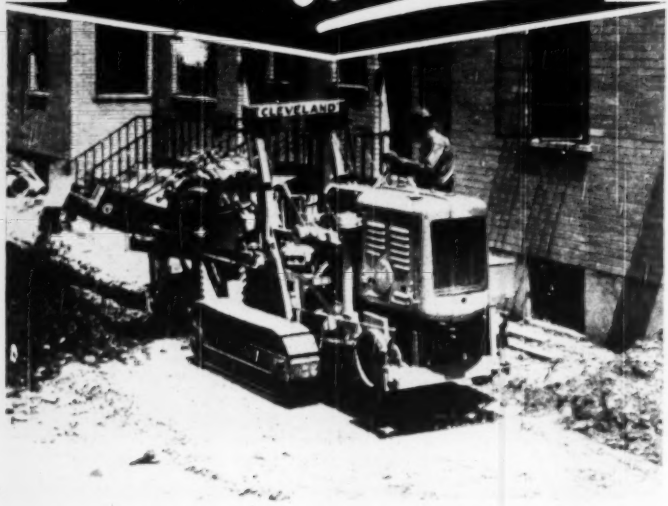

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Cement and Concrete Research Institute at the Royal Institute of Technology, Stockholm, Sweden.

LA VIBRATION DU BETON—Swedish Cement and Concrete Research Institute at the Royal Institute of Technology, Stockholm, Sweden.

COMBINED BENDING AND TORSION OF SIMPLY SUPPORTED BEAMS OF BISYMMETRICAL CROSS SECTION—Bulletin No. 3 from the Division of Building Statics and Structural Engineering, Royal Institute of Technology, Stockholm, Sweden.

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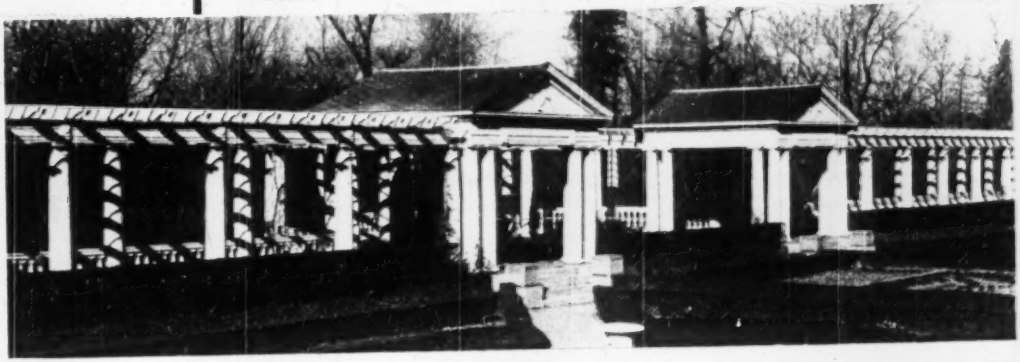
CONDENSATION CONTROL IN DWELLING CONSTRUCTION—Housing and Home Finance Agency, Wash., D. C.

ITALIAN PERGOLA . . . protected with Monsanto Penta
. . . in Missouri Botanical Garden, St. Louis, Missouri.



Monsanto PENTAchlorophenol puts protection in pergola

When the Italian Pergola, feature of Missouri Botanical Garden (Shaw's Garden) was rebuilt in 1949, officials decided upon wood as the most practical and economical material. And, to give the wood the greatest possible permanence with *paintable* treatment, they chose a formulation of Monsanto Penta. Treated wood in the structure included redwood, Douglas fir and cypress.

Monsanto Penta gives wood protection against termites and wood-boring insects . . . against fungi that cause wood to decay. Properly formulated Monsanto Penta is a preservative that leaves wood clean and paintable.

Penta always is *chemically uniform*. It is long lasting. Penta does not evaporate . . . does not weather away. Tests show that the longer penta is in wood, the deeper it penetrates.

Whether you're building pergolas or platforms, Monsanto Penta will give superior protection to your wooden structures. For technical information and names of suppliers of treated wood or penta solutions, mail the coupon or contact the nearest Monsanto Sales Office. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1759-C South Second Street, St. Louis 4, Missouri.

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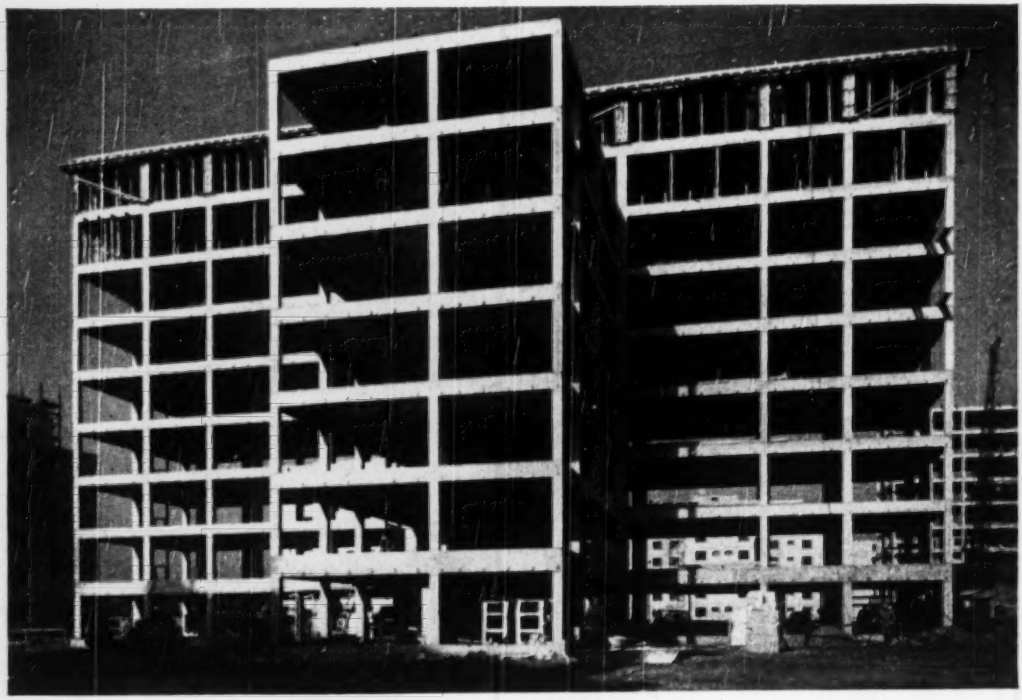

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Second, concrete frames and floors save construction time. Inasmuch as frame and floor construction proceeds together as a unit, the masons, plumbers, electricians and other tradesmen can do their part of the job as the structural work progresses.

Third, concrete frames and floors allow maximum latitude in design. There is a concrete floor system to meet every occupancy requirement. Partitions can be placed where they are most desirable because framing can be adapted to any architectural layout. Concrete frames and floors can be designed for any structural requirement or for any type of job. They are ideally adapted to schools, hospitals, apartments, hotels, factories, stores and office buildings.

Dearborn Homes (above) in Chicago on State Street between 26th and 30th Streets is a typical example of concrete frame and floor construction. This apartment project consists of 800 units in 16 buildings. Four buildings are 9 stories and 12 are 6 stories in height. Loebl, Schlossman & Bennett are the architects, Frank A. Randall & Sons the structural engineers and S. N. Nielsen Co. the contractor.

Our technical staff will gladly help architects and engineers attain the highest quality concrete and the maximum structural advantages of reinforced concrete construction for any building project.

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DEVELOPMENTS ABROAD

BUILT WITH AMERICAN AID—A French electrical engineer surveys the partially completed central power station on the Arve River at La Fayet, in the French Alps. Where the lumber is stacked at the left, there soon will be converters and high tension storage lines. The project is financed by Marshall Plan funds.—Acme photo.

The Marshall Plan—past, present and future

With the future of the Marshall Plan under consideration, here's what its past and present look like.

In less than two years, the United States has distributed more than eight billion dollars among European nations taking part in the program.

How much good has this vast expenditure done?

Otto Zausmer, foreign affairs expert of "The Boston Globe," stresses these three points about the Marshall Plan.

It has maintained the flow of vital raw materials and obviated an economic collapse.

It prevented starvation in France, Holland, Germany and Italy in 1948.

It bolstered morale and stopped the Communist tide which was about to engulf western Europe.

According to official figures, in the first year more than one-third of the Marshall Plan funds went for food, feeds, fertilizer and other agricultural commodities. The second year, only about half as much was spent for such items, and an increased amount was used for fuel, raw materials, machines and vehicles.

Only half the money was spent in the United States; one-fourth of the goods were bought in Canada; and the other fourth came from Latin America, the Marshall Plan countries themselves, and the rest of the world.

Most of the money is given as a grant and the receiving country must set aside an equal amount in its own currency. This so-called counterpart money can be used for repair of war damage, reconstruction or any other purpose, provided the United States approves.

A smaller proportion of the funds are loans; and another small part is called conditional aid, the condition being that the country getting this aid shall sell some of its products to other Marshall Plan countries.

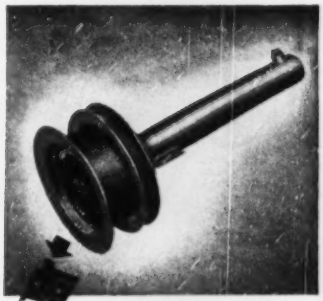
For the current year of operations, Marshall Plan allotments for the dozen leading countries in the plan are as follows:

Great Britain	$919,800,000
Western Germany	332,900,000
Greece	156,300,000
Norway	90,000,000
France	673,100,000
Belgium	312,000,000
Italy	389,100,000
Austria	166,400,000
Denmark	87,000,000
Sweden	48,000,000
Ireland	44,900,000
Holland	295,600,000

The nature of Marshall Plan operations is indicated by this official statement of March 3:

"Seven Western European countries were authorized to spend $16,410,000 for Marshall Plan recovery goods in new purchase approvals announced today by the Economic Cooperation Administration. The countries are: France, the Federal Republic of Germany, Greece, Norway, Trieste, Turkey, and the United Kingdom.

"About 25 per cent of the com-



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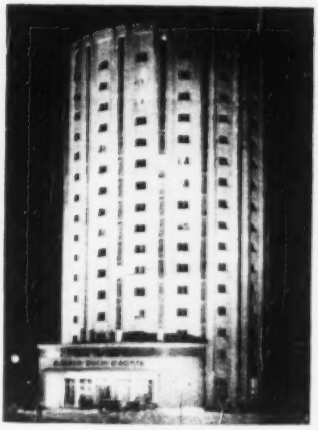
modities approved for purchase are coming from the United States and about 75 per cent from other areas of the world. The dollar value of the U. S. commodities is $4,140,000; of the offshore purchases, $12,270,000.

"ECA also reported decreases of $2,821,000 in previous European authorizations, making a net total for the day of $13,589,000. The cumulative Marshall Plan total for Europe is now $8,398,391,000."

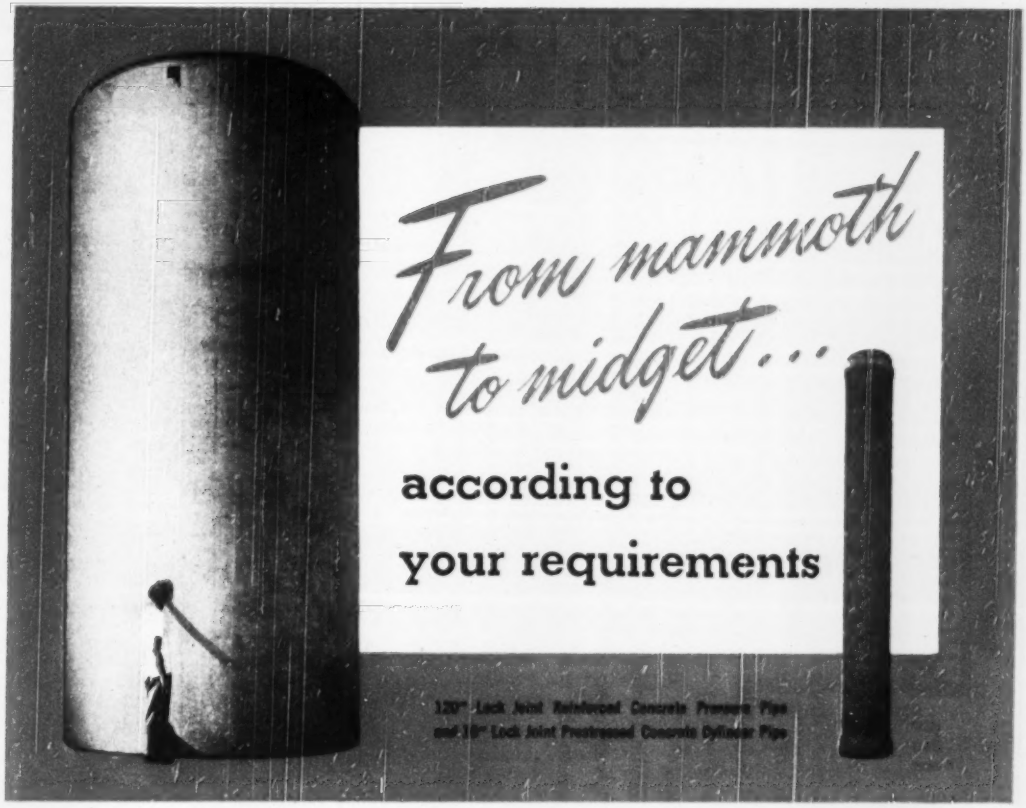
As to the future, the question is what will happen when the Marshall Plan comes to an end in 1952?

The suggestion of Prof. Lincoln Gordon, of Harvard University, who has served as a chief advisor for the Marshall Plan in Washington and Paris, is that the best way of dealing with the problem of the future is for us to increase imports from abroad and thus enable the Europeans to earn dollars with which they could buy what they need in this country. His recipe is higher imports, smaller exports, greater invisible imports such as money spent by American tourists abroad, and finally, investments in European countries.

Help for Yugoslavia—The Export-Import Bank on March 1 authorized an additional credit of $20,000,000 to Yugoslavia, following a credit of an equal amount six months ago. The purpose of the credits is to enable Yugoslavia to purchase American goods, including capital equipment, spare parts, machinery, and materials needed to maintain the present level of the nation's economy.



CIRCULAR TOWER HOTEL—The Duchi D'Aosta Hotel at Sestriere, Italy, shown here in a night view, is a famous resort hotel. Built like a circular tower, it has 184 rooms arranged along a 1,700-ft spiral ramp.—Acme photo.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Whether your daily water consumption demands be 3,000,000 gallons or hundreds of times that figure, Lock Joint Pipe Company is prepared to provide a supply line for your requirements.

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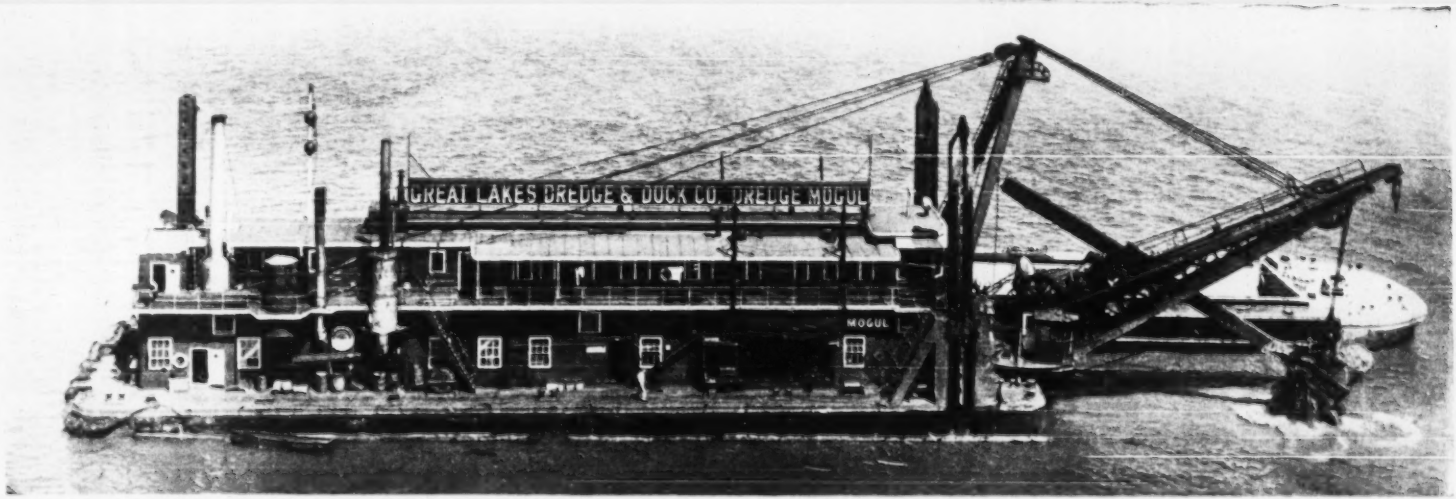

MUNICIPAL AFFAIRS

A $2,500,000 APARTMENT HOUSE—Back in Feb., 1945, the Lincomp Realty Corp. planned a 15-story apartment building for a Washington Square site in New York. The contract was let to Thompson Starrett Co., of New York, and the steel was already fabricated when it developed that the site would not be available. Looking around for a new site, the owner made the unusual decision of choosing one in another city. It is on Kingshighway Blvd. in St. Louis, Mo. The building is now under construction. Condela and Resnick, 654 Madison Ave., New York, are the architects and Wells & Wells, Inc., Security Building, 319 N. 4th St., St. Louis, are the engineers. Thompson Starrett Co. is the contractor. Cost is estimated at $2,500,000.

Anti-pollution reports

Seattle, Wash.—As the first step in a program to eliminate pollution of Puget Sound beaches at Seattle, Wash., the city council has approved plans for an intercepting sewer, pumping plant and outfall in the Alki Beach area.

The sewer will collect from two existing trunk sewers and discharge sewage into Puget Sound at a depth of 85 ft, far enough from the beach to be picked up by tidal currents. The pumping plant will move sewage from other lines to another outfall where there is no sanitation problem, eliminating an outfall near the Alki bathing beach. Total cost of this program is estimated at $212,000.

A portion of the beach has been closed to bathing because of pollution. The State Pollution Control Commission contends that the city should begin to plan for treating its sewage, while the city believes the problem can be solved by extending outfalls into deeper water.

Martha's Vineyard, Mass.—Massachusetts, New England and federal health and anti-pollution agencies lined up recently at a Massachusetts state house hearing in opposition to a Martha's Vineyard group's effort to obtain jurisdiction over harbor areas now under control of the State Health Department. Opponents argued that if allowances were made in one instance, the policy would have to be uniform, and the program to curb pollution would become ineffective.

Erie County, N. Y.—Rapid population growth in suburban Buffalo and nearby rural areas which outstrips sewage plant disposal and treatment is creating a serious health hazard in Erie County, N. Y., it was asserted by Joseph A. Salvato, chief general engineer for the county health department.

Salvato said preliminary surveys show that 76 percent of the private sewage disposal systems are inadequate. In hundreds of cases, the engineer asserted, raw sewage is being dumped into surface drainage ditches or storm sewers, which eventually drain into creeks and beach areas, where there is swimming and bathing.

Streams are polluted further, according to Michael J. Stankewick, chief of the bureau of water and sewage control engineering, by the effluent of sewage treatment plants which are so outmoded and overtaxed that sewage cannot be treated properly. Only a few sewage treatment plants in the county outside Buffalo can serve their communities adequately, he said.

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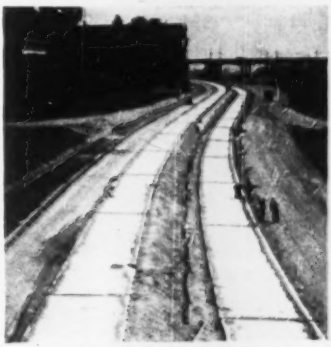

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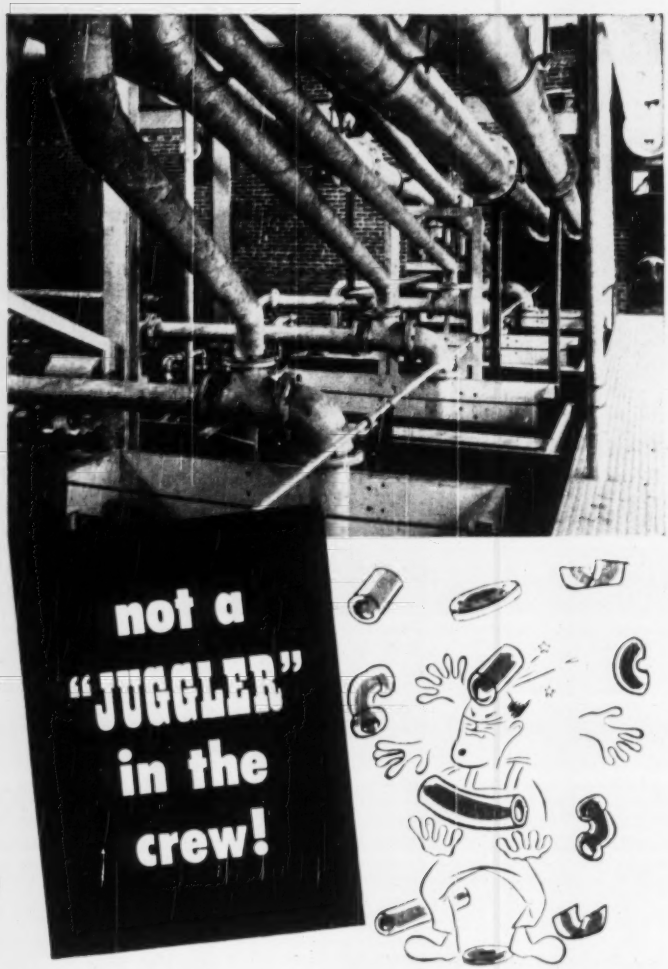

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lution of rivers and streams, according to a report by the division of sanitary engineering of the State Department of Public Health. The report says that 92.8 percent of all domestic sewage handled in sewer systems in the state is purified in treatment plants.

In contrast, the nationwide average for treatment of such sewage is 60.9 percent.

Approximately 77 percent of Illinois' population is served by sewage systems, while 55 percent of the nation's population has the benefit of sewage disposal facilities. Most of the 23 percent of Illinois' non-sewered population is rural.

In a widespread effort to eliminate further possible stream pollution in Illinois, 26 treatment works were completed in the state last year and another 22 were under construction.

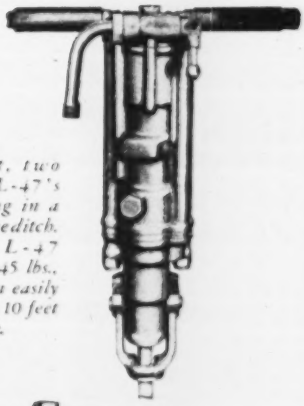
During 1949, the division of sanitary engineering also issued 126 permits for improvements to sewerage systems. This total included approval for construction or additions to 86 sewage plants.

Municipal Briefs

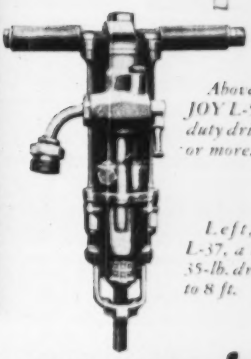
Rochester's 5-year plan—A $26,140,000, five-year public improvement program for Rochester, N. Y., has been proposed. Projects included are: A community war memorial building, construction of water pipelines and pumping plants for city use of Lake Ontario water, low-cost housing development, public market improvements, arterial highway construction, street resurfacing and reconstruction, public safety projects, reconstruction of subway structures and erection of incinerator plants.

Wilmington, Del., housing—The mayor's housing survey committee has estimated that there are 4,243 substandard houses in the city. Its definition of a substandard dwelling is that either it does not comply with the safety requirements of the building code; it does not provide adequate protection from the weather; or it does not provide sanitary toilet facilities for each family, properly connected to city sanitary sewer and water systems, or it does not provide adequate lighting and cooking facilities, or it is in need of major repairs.

Houston slum clearance—The Houston, Tex., Housing Authority is preparing a slum clearance program which may amount to $20,000,000 in the next five-year period. Mayor Oscar Holcombe asked the authority to prepare the program and said very likely the city will apply for federal aid for slum clearance some time this year.



Left, two JOY L-47's working in a pipe-line ditch. The L-47 weighs 45 lbs., and can easily drill to 10 feet or more.



Above, the 55-lb. JOY L-57, for heavy-duty drilling to 15 ft. or more.

Left, the JOY L-57, a hard-hitting 55-lb. drill for depths to 8 ft.

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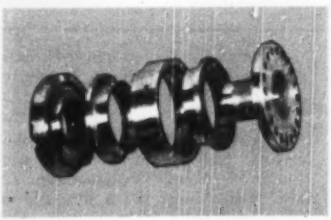

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MEN AND JOBS

Herman E. Bahmeier, construction engineer for the Bureau of Reclamation since 1930, has been transferred from Davis Dam to the Delta district of the Central Valley Project. He will direct the Bureau's construction work on the American River development, working closely with the Corps of Engineers, which is building Folsom Dam there. Mr. Bahmeier's 20-year career on western Reclamation projects has included supervision of construction of the Island Park Dam in Idaho, Vallecito Dam and San Luis Project in Colorado, Davis Dam and power plant on the Colorado River, and early stages of the Anderson Ranch Dam.

Major Gordon L. C. Scott has reported to the Waterways Experiment Station, Vicksburg, Miss., to become executive officer to Lt. Col. R. D. King, director. Major Scott was graduated from Oregon State College in 1941 with a Bachelor of Science degree in civil engineering. At the University of Illinois he received his Master of Science degree in 1947. He served overseas during the war with Headquarters, 40th Engineer Combat Regiment, in the European Theater of Operations. He served in the office of the Military Governor for Germany in Berlin, and recently with the U. S. High Commissioner at headquarters in Frankfurt and Bonn.

Elmer W. Swan has resigned as city engineer at Wallace, Idaho. He plans to move to California. He was with the Idaho state highway bureau before taking the city position.

Ellick Maslan has resigned as executive director of the Toledo-Lucas County, Ohio, Plan Commission to go with the Chicago Housing Authority. He will be in charge of the program planning section for low-rent housing. He had been connected with planning activities in Toledo since 1933.

Blaine W. Osterling, Indianapolis, has become director of the Indiana Economic Council, succeeding **Paul F. Middleton**, who resigned to become a consultant for the Federal Slum Clearance and Urban Redevelopment Commission in Washington, D. C. Osterling, a Purdue civil engineering graduate, has been a consultant in development of master plans for Kokomo and Lafayette, Ind., has been with the Economic Council for five years.

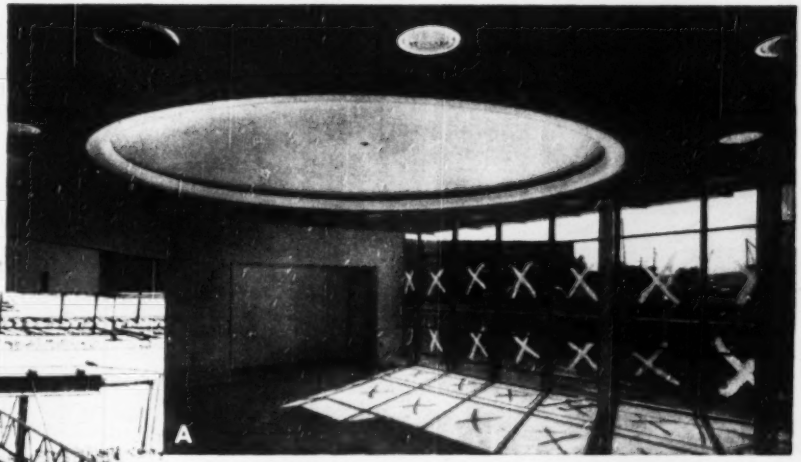
After an engineering career of nearly 50 years, **John F. Salmon**, has retired as bridge engineer, central region, Canadian National Railways at Toronto, Ont. Many of the CNR's 5,668 bridges and 150,000 culverts were under Mr. Salmon's jurisdiction. On the busy Montreal-Toronto line, he often replaced bridges without interruption of train service.

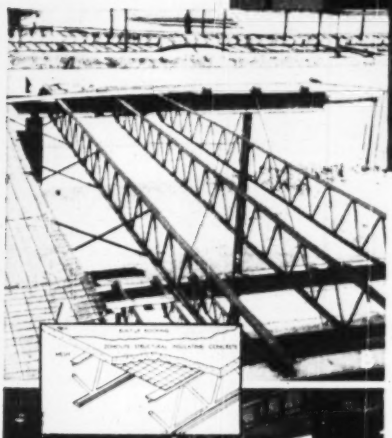
Randolph M. Martin, who left the Vancouver city engineer's department in 1941 after 20 years service to join the British Columbia electric transportation department, is returning as assistant city engineer. Mr. Martin, B.C.E. transportation engineer and one of the key figures behind B.C.E.'s postwar transit conversion program, joined the company as chief transportation clerk. He has been a member of the board of examiners of the B. C. Association of Professional Engineers since 1938, and is on the operating committee of the American and Canadian transportation associations.

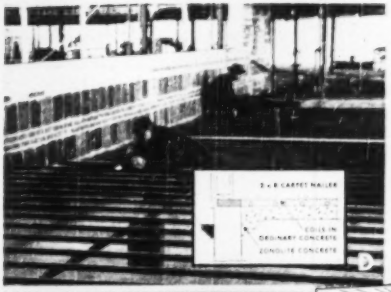
(Continued on page 68)

LOWEST COST SOUND CONDITIONING

Right: Library ceiling shows typical use of Zonolite Acoustical Plastic. Frequently, low cost and ease of application over irregular surfaces permit use where other acoustical treatments would be prohibitive.







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The new Senile Ward Building—Eastern State Hospital, Medical Lake, Wash.—illustrates graphically how Zonolite vermiculite aggregates are used in plaster and concrete to eliminate dead weight. They permit construction of class-A buildings at great savings over conventional materials. Many observers declare that the Medical Lake job could not have been built without lightweight aggregates.

CONSTRUCTION DETAILS

A Zonolite Acoustical Plastic used on library ceiling.

B Paper-backed, welded wire mesh for Zonolite concrete roof slabs.

C Applying metal lath for fireproofing girders with Zonolite Plaster.

D Installing radiant heating pipes over Zonolite concrete floors.

E Zonolite Plaster 2" solid partitions—first side.

Where Zonolite plaster was used in lieu of conventional materials for suspended ceilings, for 2" solid partitions and for fireproofing beams, up to 66⅔% of the dead weight was eliminated. Zonolite concrete used throughout for lightweight roof and floor slabs weighed only 20% as much as conventional concrete applications.

This wholesale elimination of dead weight made practical the use of much lighter structural steel members. By reducing weight in these 3 ways, further drastic reductions in time and costs were made possible.

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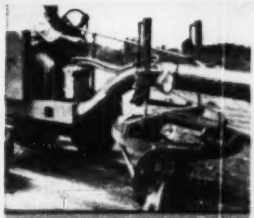

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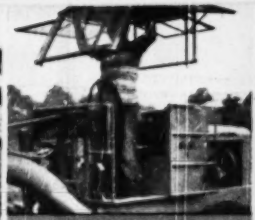

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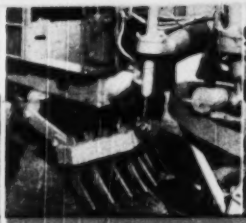

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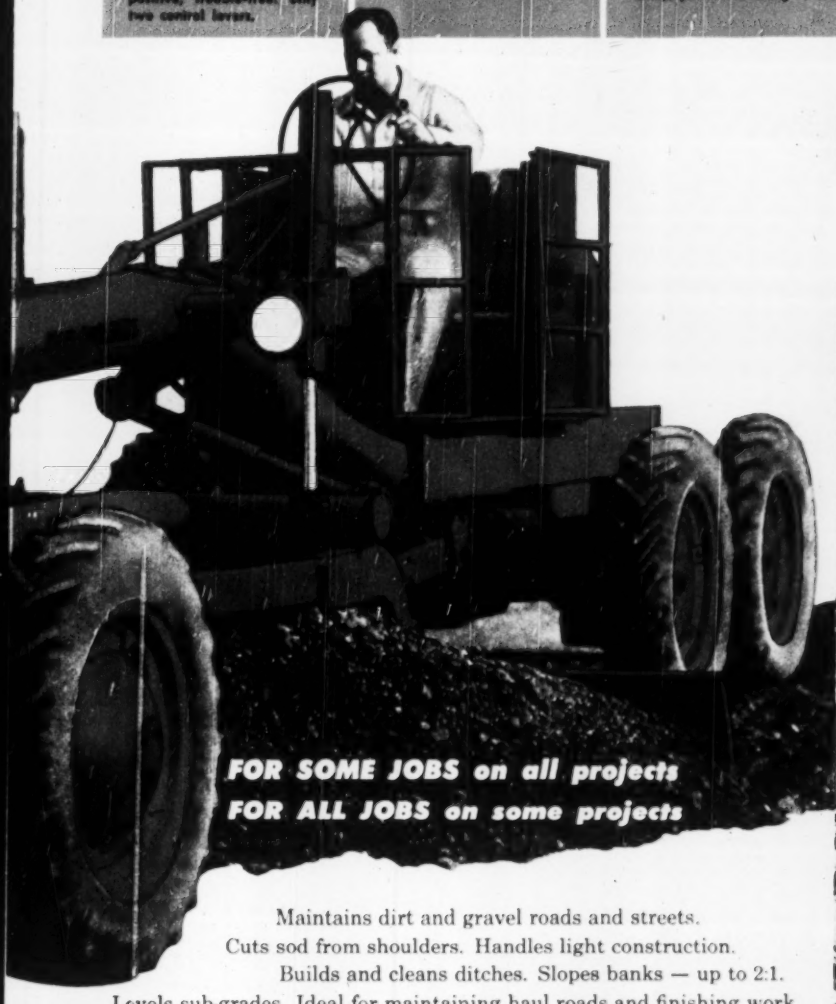

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Francis S. Friel of Albright & Friel, Inc., consulting engineers, Philadelphia, Pa., has been appointed a member of the Board of Direction of the ASCE, to succeed the late Joel D. Justin. Mr. Friel is a graduate of the Drexel Institute of Technology, and has long specialized in private, municipal, and sanitary engineering work, particularly in water supply and purification, sewage collection and treatment, special investigations and reports, public utility rates and appraisals and design and construction. From 1931 to date, he has directed an engineering staff varying from 20 to 300 engineers. During that period he has been associated with more than 1,500 projects, of which more than 200 were major engineering undertakings involving a construction cost exceeding $100,000,000.

Albert E. Low has been named assistant traffic adviser to the board of safety in Buffalo, N. Y. He was graduated from the University of Michigan with a B.S. in engineering. Following two years in the U. S. Public Health Service, he returned to the University of Michigan and obtained a master's degree in engineering. He also has been associated with the Safety & Traffic Engineering Department of the Chicago Motor Club, the Union Switch & Signal Co. and the firm of Edwards & Kelsey, Newark, N. J.

Robert L. Hall, formerly with the Ralph Woolpert Co., consulting engineers, has become waterworks engineer of Dayton, Ohio. He will work under Water Director W. W. Motehouse on the design and development of water projects. He was graduated from Purdue University in 1942 with a bachelor of science degree and in 1947 took his master's degree in civil engineering.

W. C. Dutton, Jr., assistant city planning engineer at Greensboro, N. C., has resigned to become redevelopment planner for the Knoxville, Tenn., Housing Authority, and also to work with the Knoxville City Planning Commission. He formerly was with the planning department of the Tennessee Valley Authority.

E. E. Zeiss, registrar of contracts and executive secretary of the California licensed board, has resigned to become manager of the Lumbermen's Service Bureau at 1348 "F" Street, San Diego.

George A. Lister, civil engineer, Toronto, Ont., has been appointed to the Ontario Municipal Board.

(*Continued on page 71*)

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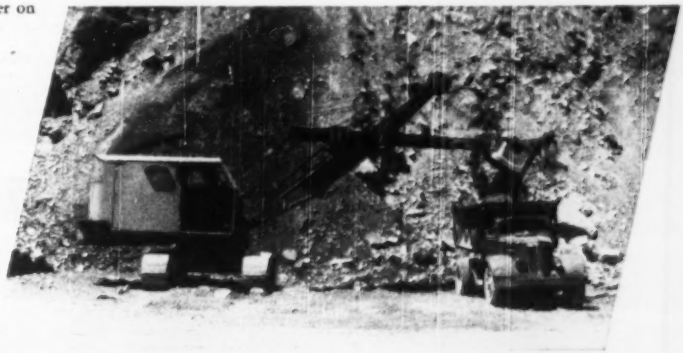
Compare and you will know why this means reduced maintenance and low-cost operation.

RIGHT: MODEL 65 HEAVY DUTY 1¼ YARD SHOVEL

BELOW: MODEL 45 HEAVY DUTY ¾ YARD DRAGLINE



YOUR BEST BUY

After making your own comparison you will buy BAY CITY for the biggest value in excavating and material handling equipment. A card or letter will bring you complete details. Let's get acquainted.

BAY CITY SHOVELS, INC.
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BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

Only TIMKEN® brings you a complete Rock Bit Engineering Service—with a choice of all three rock bit types!

THIS NEW BOOK TELLS YOU ALL ABOUT IT!

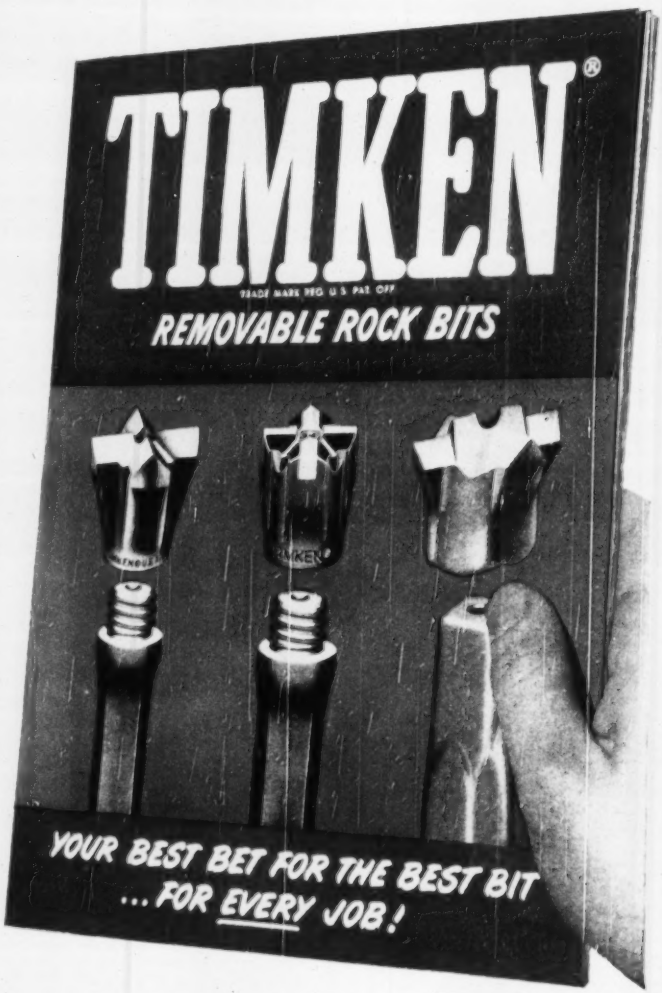
Shows full line of TIMKEN Rock Bits—in actual size

Gives advantages of every type

Tells how TIMKEN'S Rock Bit Engineering Service helps you

ONLY Timken® gives you a *complete* Rock Bit Engineering Service because only Timken makes *all three* types of rock bits! With *all three*—multi-use, carbide insert, and one-use—to draw upon, Timken Rock Bit Engineers can bring you the bit performance your job demands, whether it is lowest bit cost, lowest cost per foot, greatest possible drilling speed, maximum production, or other desired advantages.

Timken's new rock bit catalogue tells you all about the Timken Rock Bit Engineering Service. It describes the full line of Timken rock bits—shows them in actual size—gives complete data on each bit series. Everyone who buys rock bits should have this book. For your free copy of catalogue S-6874 write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".



TIMKEN

...YOUR BEST BET FOR THE BEST BIT
...FOR EVERY JOB

S. D. Capran, formerly general manager of Kearns Townsite, Inc., is opening a consulting office in the Continental National Bank Bldg., Salt Lake City, Utah, under the name of Engineering Services. Work will be in the field of water supply and municipal engineering. A materials testing laboratory is being equipped at Kearns, Utah, to operate in conjunction with the office. **A. M. Sams,** project engineer for Kearns Townsite, will be an associate of the company.

George Gibson, former New York representative of Bechtel Corp., San Francisco engineering and construction firm, has been named manager of the company's newly opened offices in Tulsa, Okla.

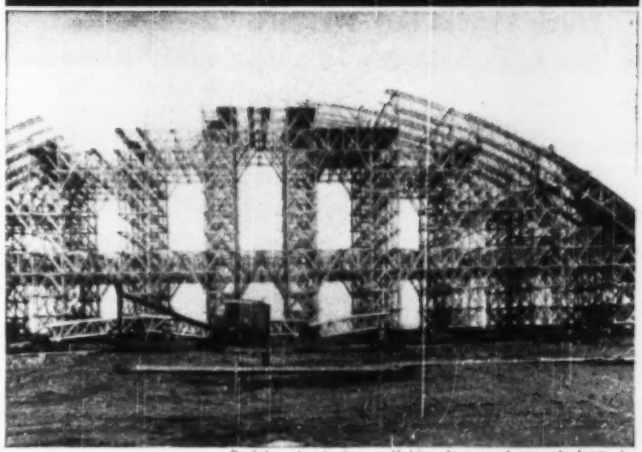
Harry C. Vensano, who resigned Feb. 1 after seven years as director of public works for San Francisco, has opened an office there as a consulting engineer. He was at one time a partner in the contracting firm of Cahill & Vensano.

O. F. Cooley, Los Angeles County road commissioner, has retired from the department after 37 years of service. Since 1913 he has directed construction of nearly 5,000 miles of improved county roads. He was code designer of the Colorado Street Bridge. During his tenure, the annual budget for county roads increased from $1,000,000 to $26,000,000.

George K. Leonard, who has supervised construction on many TVA dams, has been appointed TVA chief construction engineer, with headquarters in Knoxville, Tenn. A graduate of the University of Nebraska, he had 21 years experience in highway and heavy construction work before joining the TVA engineering staff in 1933. He became project manager of the Upper Holston projects in 1946.

Prefabricated Falsework and Concrete Forms

to Speed Construction and Increase Profit



Prefabricated timber scaffolding to support concrete forms for pouring shell roof of world's largest hangar located near Rapid City, S. Dakota. Concrete arch slab has a clear span of 340 feet and a vertical clearance at center of 90 feet. Hangar was designed by Roberts & Schaefer Co., Chicago. General contractor, Steenberg Construction Co., St. Paul, Minn.

You save both headaches and money when Timber Structures prefabricates your structural falsework, arch centering and concrete forms. This has been proved by the builder of the hangar shown here, and on scores of other jobs.

Engineering talent, fabricating facilities and experience, "no-waste" materials—this is the Timber Structures, Inc. combination that makes the difference.

Engineering Facilities for Any Job. A complete engineering department is available to supplement your own staff or to take over the entire engineering job. Specialists in wood structures with a "horse sense" approach, their designs are thorough, practical and economical.

Specialized Fabrication Equipment and Personnel. To do the highly specialized work of wood fabrication Timber Structures has developed machinery especially for this purpose. Operating these machines are men who do nothing except this specialized work. Lumber is milled for particular jobs, and there is no waste of material, labor or freight charges in rejects or leftovers.

Fabrication is completed at the plant, ready for assembly and erection, and it is not necessary to use jobsite space or develop jobsite bottlenecks for this purpose. Timber Structures will be glad to consult with you on prefabricating scaffolding and concrete forms for your next job. See the Timber Structures office nearest you, or write us.

TIMBER STRUCTURES, INC.

P. O. BOX 3782-C, PORTLAND 8, OREGON

Offices in Boise, Idaho; Eugene, Oregon; Kansas City, Missouri; Lawrenceville, N. J.; Chicago; Dallas; New York; Seattle; Spokane

Timber Structures, Inc., of California • Oakland, Sacramento, Santa Rosa

Local Representatives Coast to Coast

GENERAL

Truck Shovel has proved a "wise choice" writes A. F. Ranney, Summit County Engineer

"Before purchasing a truck shovel, we spent several days comparing shovel specifications in detail," writes Arthur F. Ranney, Engineer of Summit County, Ohio. "We selected the General Model 312—and in nearly a year of constant operation, this shovel has proved a wise choice."

"Our operator, who has been with us for 13 years and who operated shovels for many years before that, states that this General is the easiest operating shovel he has ever run," reports Ranney, who goes on to say that performance of the air-controlled air cushion clutch, responsible for much of the ease of operation, has been highly satisfactory and dependable. General Model 312 has seven travel speeds and is adaptable to crane, hoe, clamshell, and dragline. Lifting capacity at a radius of 12 feet is 40,000 lbs. Write for additional information.

The GENERAL EXCAVATOR CO.
MARION, OHIO
AFFILIATED WITH THE OSGOOD COMPANY

POWER SHOVELS, CRANES DRAGLINES, CLAMSHELLS PILE DRIVERS & BACK HOES (CRAWLER) & MOBILE CRANES DIESEL, GASOLINE OR ELECTRIC POWERED CAPACITIES ½ TO 2½ CU. YDS.

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MASONRY WEATHERPROOFING AND WATERPROOFING

The two best methods of protecting and weatherproofing Limestone, Terra Cotta, Concrete, Brick, or Artificial Stone masonry—

For Above-grade walls—
"RESTO-CRETE"*

For Below-grade walls—
"IRONITE"*

Over 30 years in this field qualify us to offer expert waterproofing service to Architects, Engineers, Builders, and Building Owners. Contact our nearest office for prompt attention.

* Reg. U. S. PAT. OFF.

WESTERN WATERPROOFING COMPANIES
ENGINEERS and CONTRACTORS . . . WEATHERPROOFING SPECIALISTS

Philip C. Cooper, research engineer for the Maryland State Roads Commission, has been appointed city engineer of Salisbury, Md. He has been with the Maryland Commission since his graduation from the University of Maryland as a civil engineer in 1931. He has been supervising a $12,000,000 construction program in the vicinity of Annapolis, Md.

Ed H. Hopson is in Texas as consultant and manager for Merritt-Chapman & Scott-Corp. on construction of the nearly completed Washburn Vehicular Tunnel under the Houston Ship Channel.

Raymond G. Ridgely, superintendent of the water department of St. Petersburg, Fla., and former city manager, has resigned. He received his science and engineering degrees from the Alabama Polytechnic Institute. After a period of teaching, he began a long career of road, subdivision and waterworks construction. In the first world war he constructed water systems for camps and cantonments.

W. N. Young, formerly assistant to the chief engineer of the Baltimore and Ohio R.R. has been appointed chief engineer of McDowell Co., Inc., 3203 W. 71st St., Cleveland, Ohio. He was chief engineer in charge of the $18,500,000 rail-water terminal at Toledo, Ohio, for the B&O and NY Central railroads (ENR Sept. 30, 1948, p. 48).

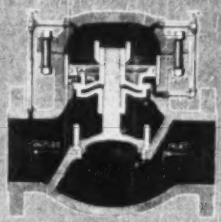
Hugh M. Hughes, who has been re-elected president of the Building Trades Employers' Association of New York City, an organization of 1,000 contractors. Mr. Hughes, head of H. M. Hughes Co., Inc., general contractors, also is president of the Building Industry Employers of New York State.

DEPENDABILITY

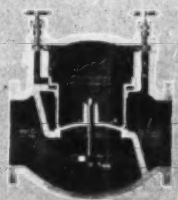
proven in

Power Plants

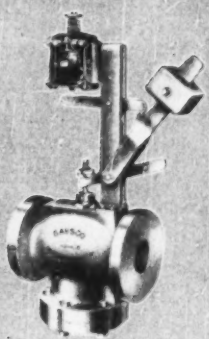
Everywhere



G-A Hydraulic Double Cushioned Check Valve, Globe Pattern.



G-A Double Cushioned Check Valve, Globe Pattern.



G-A Electric Trip Double Cushioned Check Valve, Globe Pattern.

HYDRAULIC
AUTOMATIC MANUAL
GOLDEN-ANDERSON
positive control
check valves

You will find Golden-Anderson "Positive Control" Check Valves *providing economical protection for valuable equipment* in America's largest Power Plants. Balanced Check Valves prevent reversing of pump and motor by closing instantly before reverse flow occurs. Double Cushioning feature eliminates serious surge and "water hammer" on emergency shut-down of pumps.

Write for the newest technical data on Power Plant Valves.

GA

GOLDEN-ANDERSON *Valve* Specialty Company

LIFE AND PROPERTY PROTECTION
VALVES SINCE 1903

Keenan Building, Pittsburgh 22, Pa.

THE RIGHT ALLOY
is the Right Answer to Many Piping Problems

Until recently, piping engineers were limited in their choice of piping materials to carbon steels, a few low alloy steels, wrought iron, cast iron and brass.

Today, thanks to metallurgical research and new welding techniques, many more materials are available, including intermediate and high alloy steels containing chromium, nickel, or both . . . commercially pure nickel . . . copper . . . aluminum . . . and alloys in which nickel, copper or aluminum is the major constituent.

Rapid corrosion of piping by the fluid handled, or contamination of the fluid by corrosion of the pipe—or by catalytic action of the pipe material with the fluid, are problems which today's piping engineer faces. Often, these problems are complicated by pressures and temperatures at which the fluid must be conveyed, or by wide fluctuations of pressures and temperatures when the process is cyclic in nature.

Each of these service conditions demands utmost care in the selection of the piping material.

Tube Turns, Inc. is constantly studying all of the factors involved in the application of alloy materials to piping systems. Today the ever expanding line of Tube-Turn Welding Fittings includes more than 40 different alloys in both ferrous and non ferrous classes . . . to help solve *your* piping problems.

FREE BULLETIN

Write today for your free copy of "Special Alloys"—a bulletin containing valuable information on Stainless Steels, Nickel and Nickel Base Alloys, Copper and Copper Base Alloys, and Aluminum and Aluminum Base Alloys. Discusses physical characteristics, service conditions, and gives handy sizes and weights of commonly available

"Be Sure You See The Double tt"

TUBE TURNS, INC.
LOUISVILLE 1, KENTUCKY

EDUCATION and RESEARCH

Housing research

Agreements have been made with the National Bureau of Standards, the U.S. Public Health Service and the University of Illinois for seven research projects covering investigations in plumbing and sewage disposal systems, heating and ventilation, and chimneys and flues.

The projects were set up under the supervision of Richard U. Ratcliff, director of the Division of Housing Research, and are part of the housing research program authorized by the Housing Act of 1949 for work to be done under the sponsorship of the Housing and Home Finance Agency.

Agreements with the National Bureau of Standards cover the following investigations: To provide a basis of reconciling differences of opinion on requirements for conventional plumbing installations, such as pipe sizes, stack requirements, traps, water seals, etc.; to obtain accurate data on heat transfer through commonly used materials and assemblies in actual use conditions; to develop data for the design of efficient smaller types of hand-fired coal heating systems; to develop a basis for design of improved chimneys and flues of minimum size, with adequate safety and less fuel consumption; to obtain accurate data on the movement of air in dwellings in combination with heat loss and proper ventilation for health and comfort.

The agreement with the U.S. Public Health Service provides for continuation of work under way to develop adequate and economical sewage disposal facilities for dwellings in outlying urban areas. The contract with the University of Illinois provides for a basic investigation to determine, on an engineering basis, the minimum requirements for safe and adequate plumbing installations.

Practical hydrology study

The Cooper Union Alumni Association has raised $10,000 for the construction of a small dam at the Green Engineering Camp in Passaic County, N.J. The dam on the Ringwood River in the central part of the 1,000-acre camp will be used for civil engineering instruction.

Prof. Frank C. Morgan, head of the Cooper Union civil engineering department, says that weir tests and current meter surveys will supplement the work already offered in the hydraulics laboratory. The completion of the project will permit student work in stream gaging, river hydrographs, drainage runoff, flood flow, and other experiments necessary to supplement academic work in hydrology.

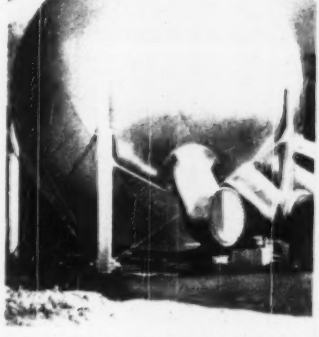
Traffic engineering

Applications are being received for ten graduate fellowships in the bureau of highway traffic at Yale University. Nine of the fellowships are made available each year through a grant from the Automotive Safety Foundation and a tenth by the American Transit Association.

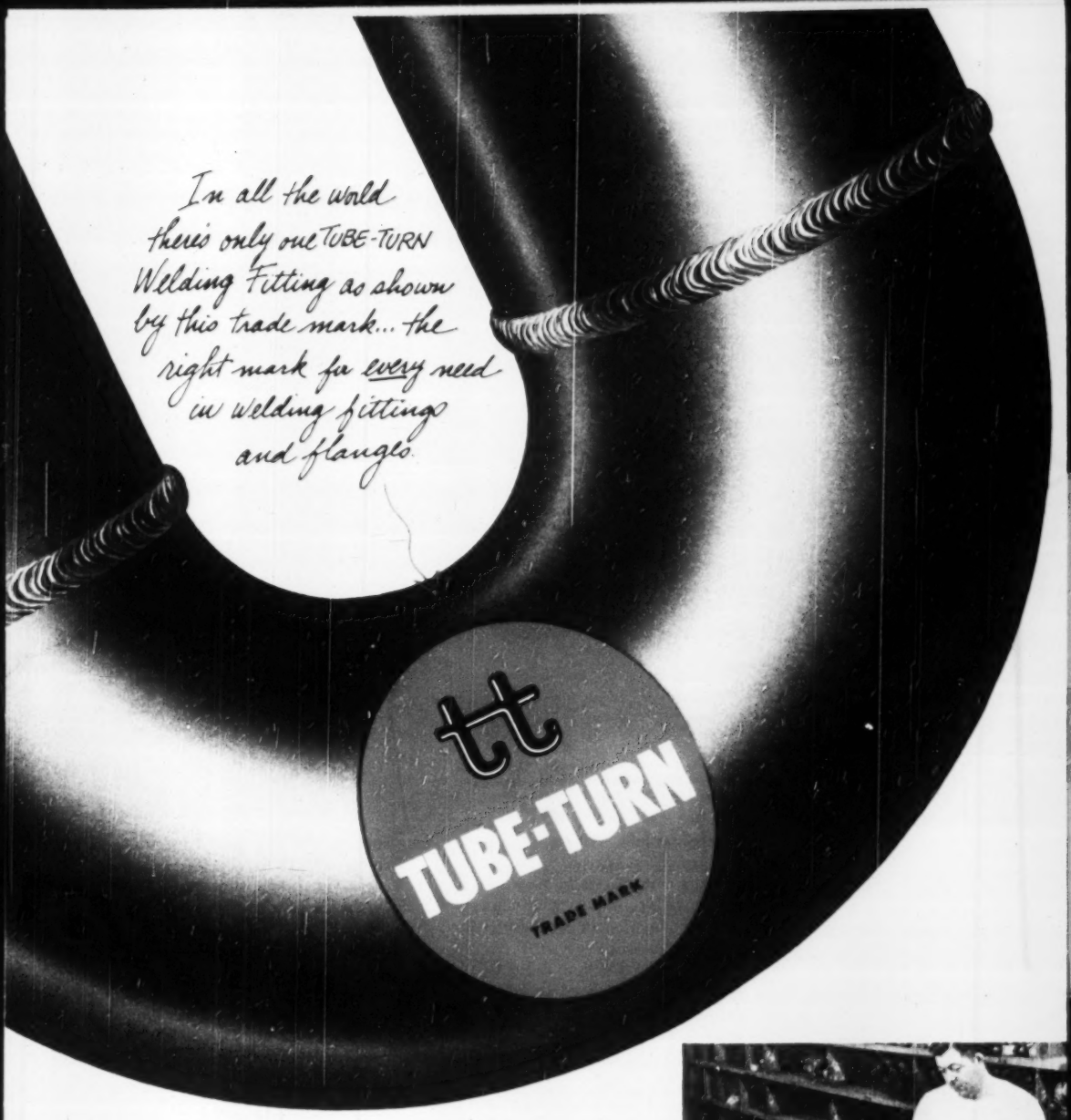
Each of the fellowships provide about $1,400 to cover living expenses and tuition for one year, and there is also a stipend for individual research projects. The awards are open to men with a degree in some branch of engineering from an accredited college, with preference for those already employed in street and highway engineering.

For full information, write to Theodore M. Matson, director, Bureau of Highway Traffic, Strathcona Hall, Yale University, New Haven 11, Conn.

(Continued on page 77)



ICOSASPHERE SAVES STEEL.—Chief Engineer J. O. Jackson of the Pittsburgh-Des Moines Steel Co., working with the Mellon Institute, has invented the "icosasphere" which saves time and waste in the rounding of steel for tanks, hulls, domes, and other rounded bodies. The structure above, the first icosasphere, was built at Carderock, Md., for a U. S. Navy wind tunnel. It is a 32-ft vacuum tank. To build it, 20 pieces of steel were fitted together. Erected in half the expected time, the usual welding requirements were reduced by one-third, and the wastage of steel as scrap was cut in half. The design is based on a shape surfaced with 20 equilateral triangles grouped into five parallelograms.—Wide World photo.



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Steam once powered this locomotive crane, operated by Reading Sand Company. It is now converted to Diesel, but power is still delivered with steam smoothness through a Twin Disc Hydraulic Torque Converter.

Retained: Steam Smoothness Added: Diesel Economy

with a Twin Disc Hydraulic Torque Converter

The Twin Disc Hydraulic Torque Converter delivers power from an internal combustion engine with all the smoothness of steam, in a continuous flow uninterrupted by gear changes . . . and with multiplication of output torque up to five times engine torque.

That's why, when the Reading Sand Company, Penbryn, N. J., converted this Orton-Steinbrenner combination switch engine and crane from steam to Diesel power to increase tractive effort and speed up the loading cycle, they specified a Twin Disc Torque Converter.

With the Twin Disc Torque Converter, the work goes faster and steam-smooth performance is retained. Twin Disc Hydraulic Torque Converters (Lysholm-Smith type) are offered in models to handle internal combustion engines, either gasoline or Diesel, from 40 hp to 1,000 hp. Ask your Twin Disc dealer or write for Bulletin No. 135-C. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin, (Hydraulic Division, Rockford, Illinois).

SPECIALISTS IN INDUSTRIAL CLUTCHES SINCE 1918

Stress Analysis

A $2,500 extension on a previous research grant has been made by the Research Corporation, New York, to August J. Durelli, of Illinois Institute of Technology, for a study of brittle material in stress analysis.

Dr. Durelli, lecturer at Illinois Tech and research engineer in applied mechanics at Armour Research Foundation of the institute, will continue his study of stress analysis by use of brittle material. In this method, an exact replica is made, usually in plaster, and pressure is applied to determine the degree of stress the structure is able to withstand, and to locate its weakest points. It is based on the characteristics of the material to crack visibly upon reaching a predetermined stram.

Educational Notes

Albert Kingsbury Hall—The new technology building of the University of New Hampshire, now nearing completion, is to be called the Albert Kingsbury Hall. It will honor the memory of Mr. Kingsbury who was an educator, inventor, and manufacturer. He was born in 1863 and died in 1945. He studied engineering at Ohio State and Cornell, and for several years was on the faculty of the institution which was the predecessor of the University of New Hampshire. He invented the Kingsbury thrust bearing. Most ships built during the last 25 years are equipped with these bearings. They also have been used in the construction of electric generators at numerous hydroelectric plants.

Technical photographs—A new print show containing unusual scientific and technical photographs has been made available by the technical division of the Photographic Society of America. Technical schools and societies and other interested groups may borrow this exhibit for a week or two at no cost except shipping expense. Requests should be sent to Earl R. Clark, 184 Malden St., Rochester 13, N. Y., stating any preference for dates.

Industrial hygiene—The University of Michigan School of Public Health will offer an in-service training course in industrial hygiene and human relations for safety personnel on June 19-21. The school believes that all safety personnel should have enough information about occupational exposures to recognize the existence or possibility of a health hazard in operations with which they come in contact. Applications for enrollment should be in writing addressed to H. E. Miller, School of Public Health, University of Michigan, Ann Arbor, Mich., with the enrollment fee of $5.00.

PERFORMANCE
That Rates
an "Oscar" on
Construction Jobs

Naylor light-weight pipe has earned "top billing" for performance in many theatres of operation in the construction field.

While light in weight, Naylor Pipe is built with exclusive strength and safety features that permit broad application not possible with ordinary lightweight pipe.

Whether it's pipe lines for high and low pressure air or water, push-pull ventilating, de-watering and drainage, dredging, hydraulic sluicing, sand and gravel conveying or other service, it will pay you to take advantage of the extra utility provided by Naylor light-weight pipe.

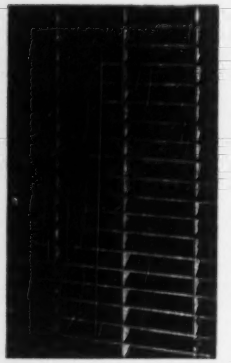
Sizes from 4" to 30" in diameter and thicknesses from 11 to 7 gauge. Write for Catalog No. 11 for full details.

NAYLOR PIPE COMPANY
1248 East 92nd Street, Chicago 19, Illinois
New York Office: 350 Madison Avenue, New York 17, N. Y.

HENDRICK ALUMINUM GRATING

SAVES WEIGHT—

RESISTS CORROSION



Because it combines light weight, with ample strength and high corrosion-resistance, Hendrick Mitco Aluminum Grating is especially desirable for many purposes.

It is being successfully used in such widely different applications as ship-board installations and in sewage disposal plants.

Its light weight minimizes handling and erection costs, and maintenance painting is not required. Write for full information on this recent Hendrick development.

SEE OUR CATALOG IN SWEET'S

HENDRICK

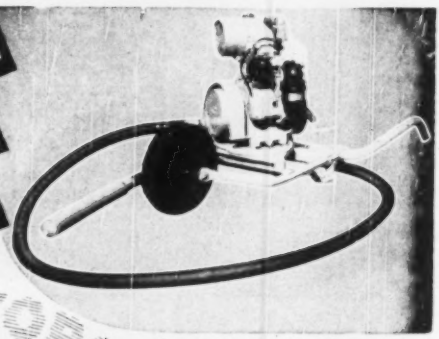
Manufacturing Company

45 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

Perforated Metals
Perforated Metal Screens
Architectural Grilles
Mitco Open Steel Flooring,
"Shur-Site" Treads and
Armorgrids

JACKSON FLEXIBLE SHAFT VIBRATORS



Excellent FOR BOTH THICK AND THIN CONCRETE SECTIONS

This husky, self-contained, trouble-free unit, powered by a thoroughly dependable Wisconsin engine with automatic clutch, may be had with three vibrator heads for thick and thin sections, flexible shafting (½" core) in 7 to 14 lengths up to 28 ft. Full swivel, dirt-proof base. Variable speed control up to 7500 V.P.M. Wheelbarrow with drop handles is optional.

The JACKSON line contains the ideal vibrator (internal or external, hydraulic, flexible shaft engine or electric motor driven) for every type of concrete construction. Write for information on the type you are interested in.

ELECTRIC TAMPER & EQUIPMENT CO.

LUDINGTON MICHIGAN

ELECTIONS AND ACTIVITIES

Edward Bartlett, city landscape engineer and deputy superintendent of Pasadena, Calif., parks, has been elected president of the newly-formed California Society of the American Institute of Park Executives. Named vice-president was William Penn Mott, Jr., superintendent of parks, Oakland, Calif. Secretary-treasurer is W. J. Barrows, of Whittier, Calif.

D. W. Kelley, president of the Arizona Sand & Rock Co., Phoenix, is the new president of the Arizona Chapter, Associated General Contractors of America. Other officers are L. G. Vinson, Vinson Construction Co., vice-president; R. M. Mikemson, Wallace & Wallace Construction Co., secretary and director; and Joseph Condrey, who was appointed secretary for the 10th year. James B. Donaldson, Dunn-Donaldson Construction Co., E. O. Earl, Tucson, and W. E. Orr, Orr Construction Co., the retiring president, are directors.

The Wisconsin County Highway Commissioners' Association elected R. B. Kenney of Sauk County, president. E. J. Stephan of Waukesha County, vice-president, F. Brunette of Brown County, secretary, and C. W. Thompson of the State Highway Commission, treasurer.

The Wisconsin Society of Professional Engineers elected E. J. Kallerong, chief engineer of Wisconsin Power & Light Co., president; Fred T. Agthe, process engineer for Allis-Chalmers Mfg. Co., first vice-president; R. C. Clark, assistant division engineer for the State Highway Commission, 2nd vice-president; A. M. McLeod, consulting engineer of Madison, secretary; Lloyd M. Schindler, city engineer for Appleton, treasurer. Directors elected: A. G. Behling, consulting engineer, Milwaukee; W. S. Cottingham, professor of structural engineering, University of Wisconsin; Ralph L. Hungerford, consulting engineer, Kenosha; Albert Owen Ayres, president of Eau Clair Sand & Gravel Co., and Carl Cannus, city engineer, Wisconsin Rapids.

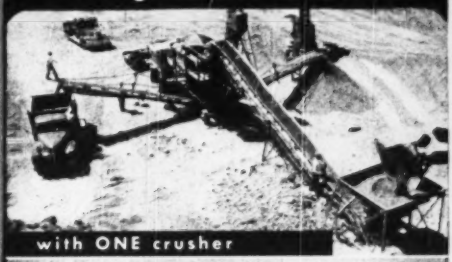
The Tacoma, Wash., chapter, A.G.C., has elected George Walter of the Walter Construction Co. as president. Also elected were Ege Dickson, vice-

(Continued on page 81)

You Name It! We HAVE IT!

Portable (and stationary) rock and gravel crushing, screening and washing plants for every requirement. High speed jaw and roll crushers, with matching conveyors and screens, combined as you want them in a plant that will give you "More Rock for Less Money."

Single-Unit Plants



with ONE crusher

with TWO crushers

with TWO crushers

Multiple-Unit Plants

TWO units... TWO crushers

TWO units... THREE crushers

THREE units... FIVE crushers

Yes, whatever your particular production problem, you will find the answer in an Austin-Western plant. Our engineering department will gladly submit sketches and estimates.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.

BUILDERS OF ROAD MACHINERY

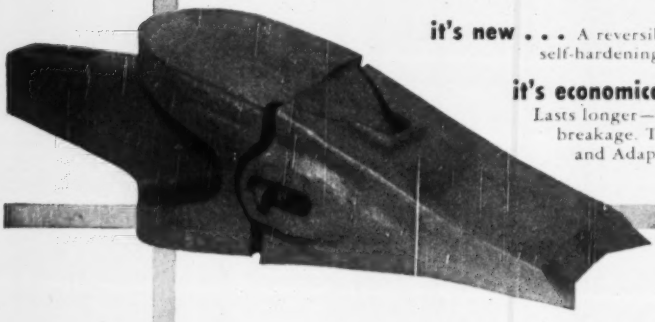
Austin Western

SINCE 1859

Announcing...

The Amsco® Rever-SharP

The first important reversible dipper tooth improvement made in years!

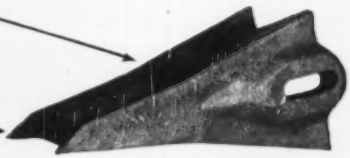


it's new . . . A reversible, self-sharpening and self-hardening tooth.

it's economical . . . Improves digging efficiency. Lasts longer—with higher resistance to breakage. Tips made of Chromanal; Shanks and Adaptors of Manganese Steel.

FEATURES OF THE AMSCO REVER-SHARP THAT LOWER HANDLING COSTS PER TON

Reversible Tip—Simply turn the tip over when worn. A new, sharp cutting edge is ready for use. Made of Chromanal, the metal that actually work-hardens in service. *The harder you use the Rever-SharP, the harder it gets!*



Unique Cutting Edges—Increase service life and cutting efficiency from 50 to 200%. Reinforced and extended corners take initial impact and work-harden faster; wear is equalized along entire cutting edge.

Special Adaptor—Made of AMSCO Manganese Steel and designed so that extra metal protects base connections and lip from wear. Available to fit all base connections.

Reinforced Nose—Supported along entire length by extended ribs. Protects against bending or breakage. Tip is self-tightening as it is forced against the tapered nose during use.

Trigger Lock-Key—Tapered for easy insertion and removal. Rubber insert prevents loosening in service.

REVER-SHARP ALREADY IN USE—AND SERVICE-PROVED

Acceptance of the Rever-SharP is enthusiastic—*one user reports 6 times the service of former teeth.* Get the complete facts on this new, better dipper tooth. Write today for complete information.

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION

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president, and P. F. Stevens, secretary-treasurer, while C. W. Todd continues as executive secretary and manager. The chapter has been divided into two divisions—building and heavy construction. Members of the board of directors for the building division are L. B. Macdonald, James W. Purvis, Sam Bergesen, Roy T. Earley and Roy Hartman. Members of the board for the heavy and highway division are J. A. Woodworth, A. S. Macdonald, J. A. Harrison, Earl Shipley and J. D. Shotwell.

M. M. Bailey of Hornell has been elected president of the New York State Highway Engineers Association. Other officers, vice-president, A. V. Moore, Albany; secretary, M. H. Bingham, and treasurer E. F. McDonough, Albany.

MAJOR MEETINGS

American Wood Preservers' Association, annual meeting, Rice Hotel, Houston, Tex., April 25-27.

Highway Transportation Congress, Mayflower Hotel, Washington, D. C., April 25-27.

Indiana Section, American Water Works Association, Purdue University, Lafayette, Ind., April 26-28.

American Society of Civil Engineers, spring meeting, Los Angeles, Calif., April 26-29.

Maryland-Delaware Water and Sewerage Association, Fort Cumberland Hotel, Cumberland, Md., April 27-28.

Third Inter-American Congress of Municipalities, New Orleans, La., May 2-5.

N. Y. State Society of Professional Engineers, Hotel Statler, New York City, May 4-6.

Pacific Northwest Conference, ASCE, Winthrop Hotel, Tacoma, Wash., May 5-6.

American Society of Civil Engineers, Pacific Northwest Conference, Winthrop Hotel, Tacoma, Wash., May 5-6.

Producers' Council, spring meeting, Washington, D. C., May 9-10.

Highway Conference, University of Florida, Gainesville, May 11-12.

U. S. Conference of Mayors, Waldorf-Astoria Hotel, New York City, May 11-13.

Florida Highway Conference, University of Florida, Gainesville, Fla., May 11-23.

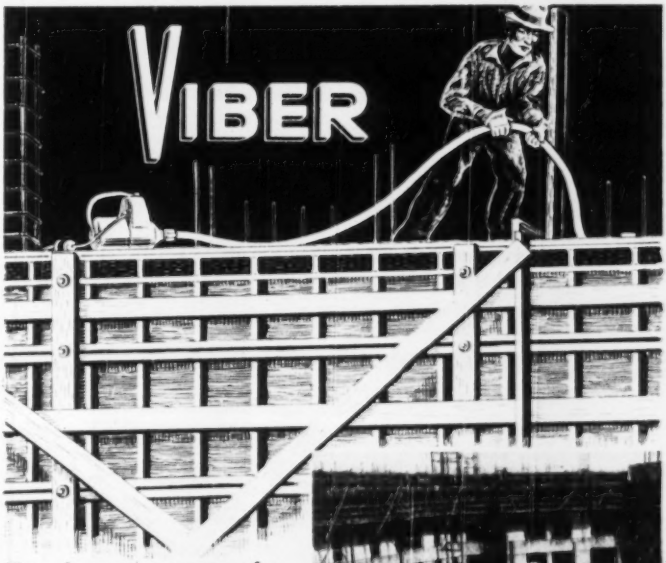
National Citizens Conference on Planning, Statler Hotel, Washington, D. C., May 12-17.

American Water Works Association, annual conference, Convention Hall, Philadelphia, Pa., May 21-26.

Society for Experimental Stress Analysis, spring meeting, Hotel Statler, Cleveland, Ohio, May 23-25.

Central States Sewage Works Association, Hotel Lincoln, Indianapolis, Ind., June 9-10.

Western Association of State Highway officials, Mapes Hotel, Reno, Nev., June 12-15.



Now in use on one of the largest architectural concrete construction jobs in the United States

New architectural and engineering techniques are being pioneered on the Metropolitan (Parklabrea) Housing Project in Los Angeles.

VIBER SELECTED...One of the five unusual features of this tremendous project is an effort to reduce time, effort and costs in concrete placement operations. The exclusive use of Viber equipment on a project that is testing new construction methods and techniques illustrates the regard engineers and construction men have for this interchangeable line of concrete vibrators.

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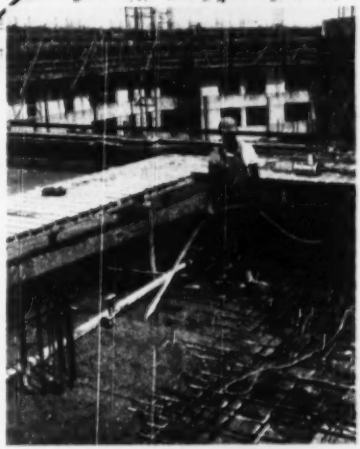
GOVERNMENT AND RESIDENTIAL HOUSING...The vast program of Government and residential housing now in planning and process is just one of the fields in which Viber plays an important roll.

For further information on the complete line of Viber Interchangeable Vibrators, please wire or write ·



$40,000,000 Parklabrea Housing Project, Los Angeles

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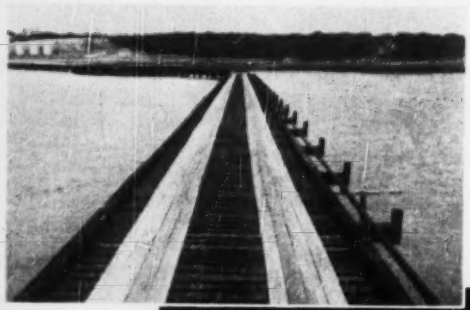
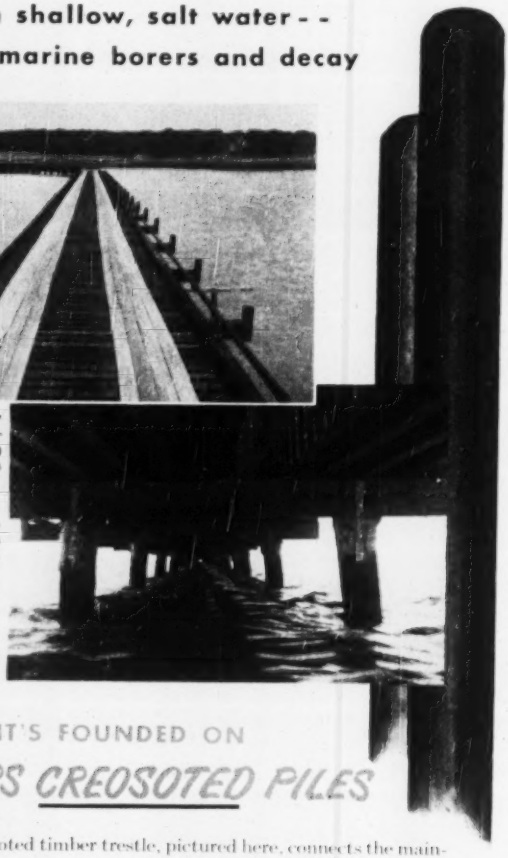
4,000-FOOT RUNWAY

- - built in shallow, salt water - -
resists marine borers and decay



4,000-Foot Runway Connecting the Mainland with Oil Drilling Operations, Nueces Bay, Texas.



Looking Underneath the Runway. Koppers Creosoted Piles Support This Structure.

IT'S FOUNDED ON

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● The creosoted timber trestle, pictured here, connects the mainland with two oil wells in the Nueces Bay area near Corpus Christi, Texas. Such structures must be built quickly, at comparatively low cost, yet must remain sound and serviceable throughout the production life of the oil field.

That's why this 4,000-foot runway was founded on Koppers Pressure-Creosoted Piles. They are quickly available; they are ready to drive when received; they are usually lower in cost than other permanent pile materials. As for permanence, a service life of thirty years is commonplace because Koppers Piles never rust or spall . . . they are protected against decay and marine borers — the greatest threats to long life.

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KOPPERS **PRESSURE-TREATED WOOD**

OBITUARY

George H. Hill, 85, oldest engineer in the service of the State Road Commission of West Virginia, died March 20 at Charleston, W. Va. At the time of his death he was staff engineer for the department of contracts. A graduate of the University of Pennsylvania, 1889, Mr. Hill was former city engineer of Bluefield, W. Va.

C. A. Gray, 73, engineer of Wayne, Neb., died March 21.

P. W. Sherrin, 77, formerly in the engineering department of the dominion government of Canada, died in Ottawa, March 22.

Wm. H. McDonald, 60, a former member of the engineering staff of Wyandotte County, Kan., died in Kansas City, Kan., March 23.

Joseph J. Coffey, 55, chief engineer for the Ford, Bacon & Davis, Inc., builders of the Electro Metallurgical Corp. powerhouse at Ashtabula, Ohio, died there March 6.

Carl L. Randolph, retired Los Angeles County engineer, died March 10 in Arcadia, Calif. He served on the county staff for 15 years.

William E. Ryberg, 57, head of the Utah Sand & Gravel Products Corp., died recently in Palm Springs, Calif. Well known in Western construction, Mr. Ryberg, with his brother Eric, founded Utah Sand and Gravel in 1919, later establishing branches from Wyoming to California. Currently one of the West's largest producers of concrete, ballast, gravel, and sand, the Ryberg firm has handled much of Utah's road building and was among the prime contractors for the Salt Lake municipal airport. The company also furnished upwards of 2,000,000 yds of sand and concrete for the construction of Geneva Steel Plant near Provo during the war.

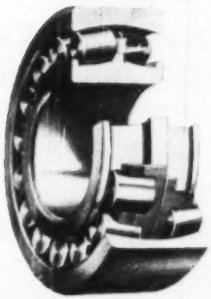
Paul J. Kevser, 53, civil engineer with the Bureau of Reclamation, died recently in Fresno, Calif. He had been engaged in designing water distribution systems for the Friant-Kern Canal, a part of the Central Valley Project.

Roy S. Spalding, 67, for many years an engineer in the water pipe extension department of Chicago and later engaged in the contracting business, died recently. After giving up his

(Continued on page 85)

crushing big ones into little ones with

TORRINGTON SPHERICAL ROLLER BEARINGS



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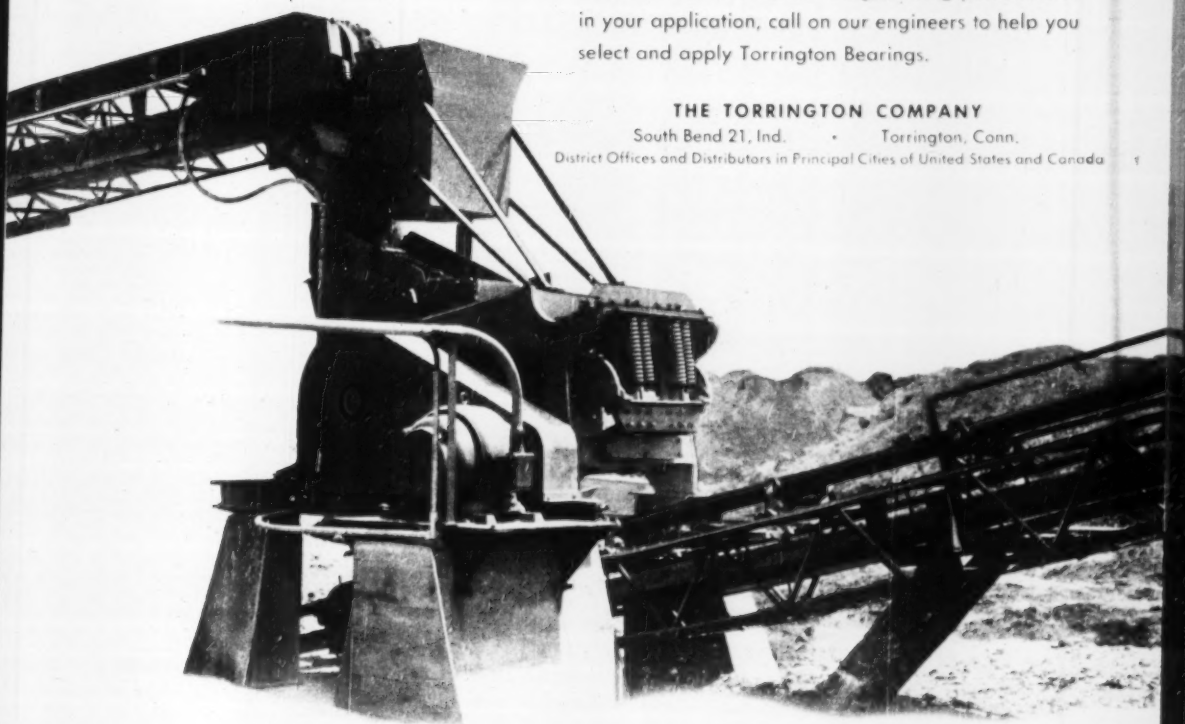

TORRINGTON SPHERICAL ROLLER BEARINGS

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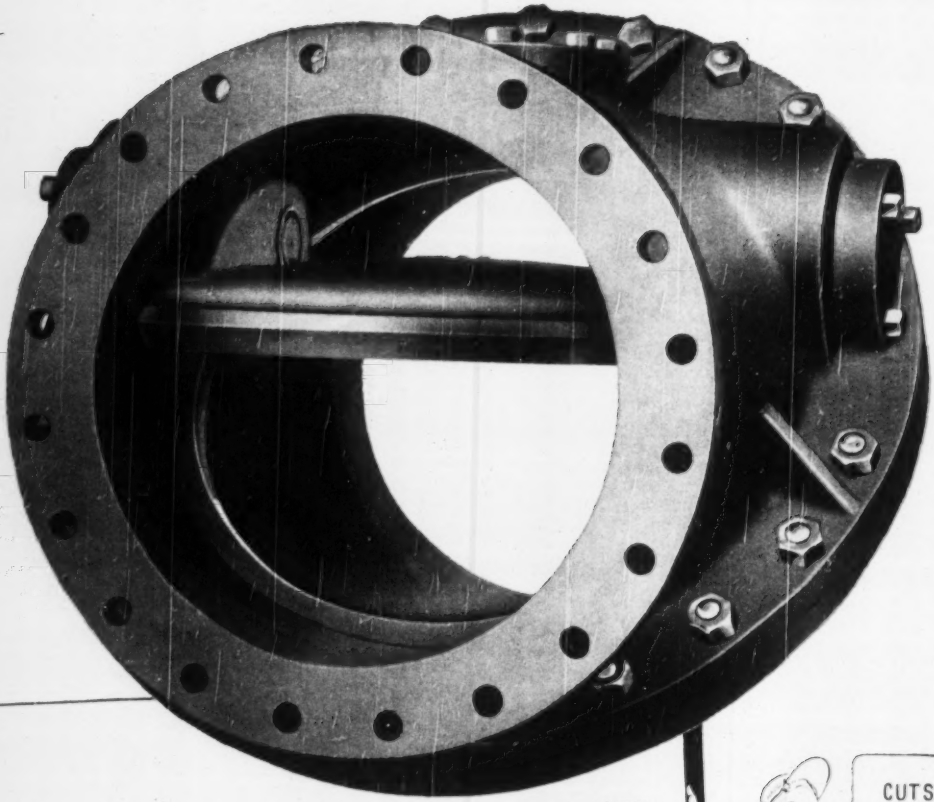

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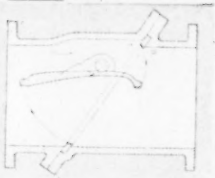
TILTING DISC

Check Valves

Because of their unique design, Chapman Tilting Disc Check Valves *close without slamming*. There is no water-hammer . . . no vibration of pipe lines or adjacent structure. Nor any danger of opening up pipe joints or rupturing pipe lines. All mighty important reasons why maintenance costs are bound to go down when you standardize on this valve with the cushioned closing.

Yet that's only part of the story. Chapman Check Valves also reduce head losses 65% to 85% over conventional type check valves. And, when installed on pump discharge lines, they not only make possible increased pipe-line capacity but also effect substantial power savings.

Why not send for bulletin with engineering data *today*?



Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

THE CHAPMAN VALVE MANUFACTURING COMPANY

INDIAN ORCHARD, MASSACHUSETTS

business several years ago, Mr. Spalding returned to the city staff to serve as a liason officer. He was graduated in civil engineering from Armour Institute of Technology.

Joseph G. Kimmel, 64, civil engineer, of Sarasota, Fla., died there March 14.

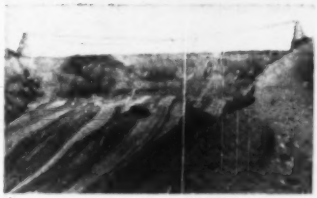
Murray Schwartz, 79, for more than half a century a civil engineer and surveyor in Omaha, Neb., died at Lucerne, Calif., March 15. For more than 35 years he was a member of the engineering firm of Towl, Nelson and Schwartz, Omaha.

A. B. Ribbeck, 58, head of the Bureau of Reclamation engineering office at Sacramento, Calif., died last month from exposure and exhaustion in the snowy wilds of the northeast corner of California. With Rudy Simonson, another engineer, who survived, they had struggled for 14 miles over deep snow in zero weather after their car broke down on an inspection tour of the Klamath basin.

Alvah L. Lomas, 68, of Grant's Pass, Ore., died March 6. He was a civil engineer and spent most of his life in Washington and Oregon.

Paul Goodwin Brown, 79, died on March 24 in Palm Beach, Fla. He was principally engaged on construction projects, specializing in the building of tunnels, subways and foundation work. He had been a director of the American Society of Civil Engineers, consulting engineer and expert for Chicago and for the Transit Commission and Board of Water Supply of New York, supervisor of ship construction for the U. S. Shipping Board and head of the Military Engineers Committee of Greater New York during World War I. The engineering projects with which Mr. Brown was connected as construction engineer, construction superintendent or consultant, include all types of heavy construction for foundations, bridges and subways involving the expenditure of many millions of dollars in connection with the Pennsylvania Railroad Terminal improvement in Philadelphia, electrification of 40 miles of railroad in the P.R.R.'s Philadelphia Terminal, reconstruction of Grand Central Terminal in New York City, a 5-mile tunnel for the Cincinnati Water Works, the Pennsylvania Railroad crosstown tunnel in New York City, building of deep foundations on Ward's Island for the Hell Gate Bridge, and construction of a section of the Philadelphia subway.

Sauerman LONG RANGE MACHINES



Sauerman Scraper with rapid shifting device at tail end, makes deep cut into hill, moves earth 400 ft. and dumps into hopper at rate of 2,000 cu. yd. a day.

Sauerman Slackline Cableway digs deep, wide pit and moves 30 to 40 loads of wet material hourly to top of screening plant.

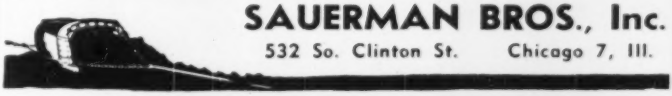
Dig, Haul, Dump
at lowest cost!

MANY problems in earth moving and stockpiling can be simplified and a great deal of money saved by using either a Sauerman Power Scraper or Slackline Cableway which digs, hauls and places materials in one operation.

First cost of a Sauerman machine is reasonable, maintenance expense is small, and the simplicity of operation permits easy one-man control of even the largest installation.

This equipment is flexible and is readily adapted to meet new conditions. Sizes range from small portable units designed for cheap handling of a small hourly yardage up to powerful machines that will move as much as 600 cu. yd. per hour of tough materials.

Write for our catalog and see for yourself how others have cut costs on hundreds of difficult jobs with SAUERMAN Machines.



SAUERMAN BROS., Inc.
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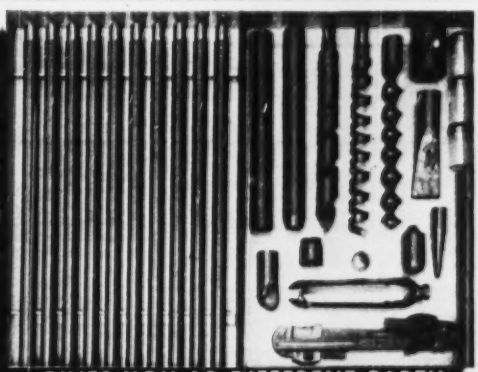
ACKER SOIL SAMPLING KIT



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UNIT PRICES BID BY CONTRACTORS

Rio Grande de Loiza Dam and substructures, San Juan, P. R.

Close bids from 5 American, 1 American and Canal Zone combination, and 2 Puerto Rican contractors, were opened Jan. 23, 1950, by Puerto Rico Aqueduct and Sewer Authority for the Loiza Dam, power plant structure and pumping plant structure. This $2.7 million letting is part of the $8 million Rio Grande de Loiza water supply for San Juan Metropolitan district and other municipalities. The 48" supply line and 30 mgd filtration plant are already in service. Buck, Seifert and Jost, New York and San Juan are the designing and consulting engineers.

The dam will be concrete gravity type, 700 ft. long with spillway crest 60 ft. above stream bed. Drainage area above dam is 207 sq mi, subject to flash floods up to 100,000 cfs. It will have eight 30' x 39' tainter gates. The initial power installation will be two 1250 kva generators and 1680 hp hydraulic turbines.

Cement will be furnished by the Aqueduct Authority. The classes of concrete on which bids were taken are:

- Cl A Beams, slabs, walls, less than one meter thick
- Cl B Slabs & walls 1-2 meters thick
- Cl C Slabs and walls over two meters thick
- Cl D Mat below spillway overflow section
- Cl E Mass concrete in outer 1.5 meters of upstream and downstream faces of dam
- Cl F Mass concr in interior of dam

Coarse aggregate up to 6" in size will be used in the mass concrete. Satisfactory sand and gravel are available in the stream bed in the vicinity of the dam.

The concrete prices shown are for gravel aggregate. Only one bidder submitted prices on the crushed stone alternate.

Actual wages paid are slightly higher than established by the Insular Minimum Wage Law. Hours worked are limited to 8 per day, 44 per week, double for overtime. Prevailing rates per hour include: unskilled labor $0.34, trench diggers $0.40, carpenters, masons and mechanics' helpers $0.45, masons $1.00, reinf. steel placers $0.65, reinf. steel binders $0.47, carpenters $0.695, welders $1.10, mechanics $1.05, equipment operators $1.20, sub-foremen $0.81, construction foremen $65.00.

Contracts were awarded to:

Sumner S. Sollitt and Co., Chicago, Ill. Construction of dam and appurtenant structures	$2,131,600
Willamette Iron and Steel Co., Portland, Ore. Furnishing tainter gates, hoists and controls	386,704
International General Electric S. A. Inc., San Juan, P. R. Furnishing turbines & generators	193,956
Total	$2,712,260

Bidders included:

1 Sumner S. Sollitt & Co., Chicago, Ill.	$2,131,600
2 Welsbach Corp., Philadelphia	2,201,200
3 Hardaway Contracting Co., Columbus, Ga.	2,230,750
4 Walsh-Mills-Blythe Const. Co., Inc., New York, N. Y.	2,241,562
5 Macco Corp., Paramount, Calif. Panpacific Const. Corp., Pedro Miguel, Canal Zone	2,479,500
6 Mendez, Grillasca, Nolla, Galib, Marquez, Inc., Rio Piedras, P. R.	2,482,680
7 Frederick Snare Corp., Puerta de Tierra, P. R.	2,485,050
8 Raymond Concrete Pile Co., New York, N. Y.	2,553,440
Engineers Estimate	2,344,400

Items		Quantity	Unit prices 1 Cont	2
Earth excav & bkfl	cm	26,000	1.80	2.05
Rock excav	cm	27,000	5.00	5.31
Prep rock fns	sm	8,200	2.00	1.81
Cl A concr	cm	1,500	38.00	26.25
Cl B concr	cm	2,700	33.00	19.92
Cl C concr	cm	5,000	24.00	22.00
Cl D concr	cm	3,400	16.00	14.77
Cl E concr	cm	13,000	21.00	15.69
Cl F concr	cm	29,000	17.00	12.42
Steel reinf	lb	225,000	0.12	0.14
Copper w stops f&i	lb	1,700	1.00	2.23
Steel w stops f&i	lb	5,000	0.50	1.03
Dr holes for pres grout	lm	500	7.00	27.28
Dr rock for dwls & weep holes	lm	1,800	5.00	17.99
Furn & pl grt	cm	5	300.00	1344.40
Furn & pl grvl	cm	40	10.00	11.00
St pipe & ftgs f&i	lb	170,000	0.30	0.41
Cl B&S f&i	lb	30,000	0.30	0.27
Cl B&S ftgs, incl wall sleeves f&i	lb	15,000	0.40	0.56
Cl soil p & ftgs f&i	lb	6,000	0.40	0.35
Br pipe & ftgs f&i	lb	1,000	1.70	2.09
Wl pipe & ftgs f&i	lb	7,000	0.60	0.44
Lump sum items			1	2
Cofdams & pumpg			$297,000	$250,597
Trash gate, sluice gates, valves & appurt f&i			74,000	101,202
Misc met wk f&i			35,000	75,651
Tntr gates, erect & install			208,000	299,888
Receivg, haulg & placg turbine & generator embedded parts			7,000	19,900
Travelg intake screens f&i			35,000	70,778
Trash racks, rake & hoist f&i			20,000	38,996
Paint & misc items			46,000	62,003
Cleaning up			5,000	70,051

cm-cubic meter, sm-square meter, lm-linear meter

Pine Flat Dam, Kings River, Cal.

To take risk out of the excavation bidding, (and reduce contingency allowances on the main contract) the rough excavation was let in 1947 to the contractors and for the prices shown here.

The 1947 excavation contracts specified minimum wages of $1.60 to $2.25 for power equipment operators and $1.15 for unskilled laborers.

For excavation for right abutment seven bidders included:

1 H. Earl Parker, Inc.	$522,650
2 Clyde W. Wood, Inc.	560,500
7 L. E. Dixon Co.	883,540

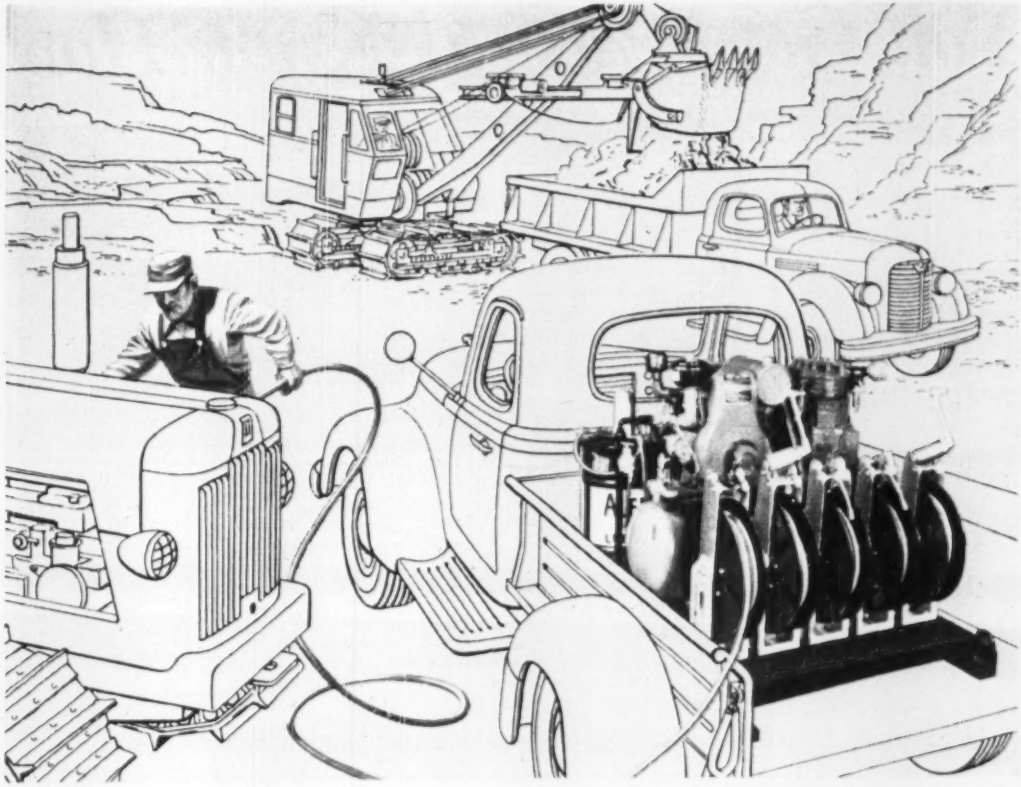
Items, right abut.		Quantity	Unit Prices Nov. 1947 1 Cont	2
Clearing	ac	9	50.00	250.00
Excav uncl	cy	200,000	2.45	2.59
Cleanup	sq	2,300	14.00	17.50

For construction of access roads and excavation for left abutment eleven bidders included:

1 Piombo Const. Co. Contr.	$261,988
2 Westbrook & Pope	293,590
11 Haddock Engineers Ltd.	586,652

Items, Access road (ar) & left abutment (la)		Quantity	Unit prices March, 1947 1 Cont	2
Clear & grub	ac	17	350.00	500.00
Clear la area	ac	5	700.00	500.00
Excav uncl la	cy	55,000	2.25	2.80
Excav uncl ar	cy	55,000	1.22	1.50
Spot sub-gr reinf	cy	2,200	4.25	2.00
Water for comp appl as dir	Mgal	1,000	3.00	2.00
Grav surf crs ip	cy	3,800	4.25	2.00
12" CM pipe, 16 g ip	lf	720	4.60	2.00
24" CM pipe, 14 g ip	lf	130	7.70	5.00
Cleanup	sq	1,500	19.25	20.00

Unit prices on dam itself were reported in ENR 3-30-50.



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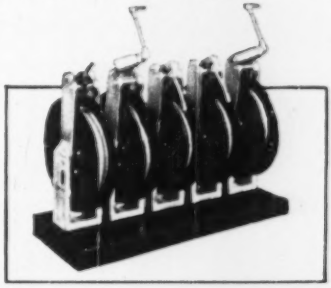

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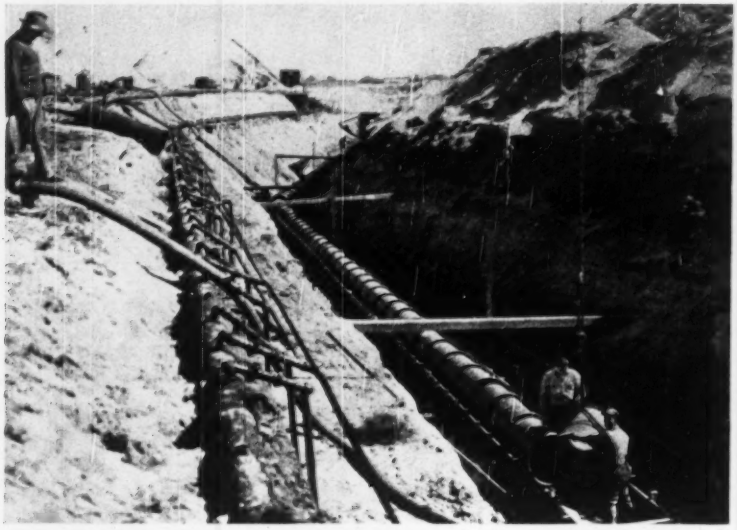

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Liner Plates	Ship Lap Wall Coping	Chimney Pots
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Aerodrane Filter Block	Drain Tile	Fire Clay
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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager · *J. A. MAHONEY, Reports* · *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Pa., Allentown—B.A. 4-19—General State Auth., 13 and Herr Sts., Harrisburg—Improvements to reservoir and pumping equipment at Allentown State Hospital, $260,000. Plans deposit $5. Gilbert Assoc., Inc., 412 Washington St., Reading, engr.

CONTRACTS AWARDED

B. C., Victoria—Greater Victoria Water Bd., Stewart Bldg., Victoria—30,700 ft. 36- to 48-in. welded steel pipe to Fass Manoux N. Co., Ltd., 332 7 Ave. West, Calgary, $335,500. Bids 3/15, awarded 3/24. CD 3/6.

SEWERS, WASTE DISPOSAL

LOW BIDDERS

Tex., College Station—Agricultural & Mechanical College of Texas, College Station, Feb. 28, sanitary sewer lines—Municipal Service Co., Tyler, $52,221. Est. $50,000. CD 2/3.

BRIDGES

BIDS ASKED

New Jersey and Pennsylvania—B.A. 4-19—Delaware River Joint Toll Bridge Comm., 526 Broad St. Bank Bldg., Trenton, N. J.

Warren Co., N. J. and Northampton Co., Pa.—Construction Section No. 1 of Route 611, Stroudsburg, N. J. Main Deposit $10. C. Greiner Co., 1201 St. Paul St., Baltimore 2, Md., engr. Use ENR 6/22 CD 4/8.

LOW BIDDERS

New Jersey—State Hy. Dist., State House Annex, Trenton, Mar. 30 (bids received) bridge over Alpha-Raritan Canal, Bridge Ave., Somerville, Somerset Co., Wolfe Co. & A. S. Watson, Lakehurst, N. J., $230,669. CD 3/30.

▲ Pennsylvania—Pennsylvania Turnpike Comm., 11 N. 4 St., Harrisburg, Mar. 29, superstructure of bridge to carry westerly extension of Pennsylvania Turnpike over Allegheny River, Exit 5, (A.A. Room 5000 on right) delivering bulk of the river easterly to Turnpike centerline on the Tarr bulk, 0.43% mile Allegheny Co., from American Bridge Co., Broad Street Station Bldg., Phila., $2,135,576. CD 3/6.

CONTRACTS AWARDED

▲ Pennsylvania—Pennsylvania Turnpike Comm., 11 N. 4 St., Harrisburg, construction of bridge to carry Western extension of Pennsylvania Turnpike over Ohio River, Exit 2, (PA. Route 60 on right delivering bulk of the river southerly to Turnpike centerline on the Neville bulk, 0.43% mile Allegheny Co., from Ambridge Bridge Co., Broad Street Station Bldg., Phila., $1,568,272. Bids 3/20. CD 3/22, under LB.

STREETS AND ROADS

LOW BIDDERS

New York—Highway Dept., Queens Boro., Queens Boro Hall, 120-55 Queens Blvd., New Sanitary Zone 15, sewer construction and pavement Rockaway Blvd. from 24th St. to Nassau Co. line, incl. installing steel and C.I. water mains, Queens Boro., from Pavements Asphalt Corp., Feb. 22, 91 Ave., Jamaica, $679,904. CD 2/16.

Virginia—State Hy. Com., Richmond, Mar. 28, 8.006 mi. grading, drainage, 2.08 mi. waste and use, and 7.926 mi. surface treatment, with 4.665 mi. bituminous mixed in place, Route 58, Wythe Co., from Hugh L. Nuckols, Inc., Richmond, $339,932. CD 3/23.

CONTRACTS AWARDED

Tex., Fort Worth—Tarrant Co., Courthouse, road repairing, resurfacing, cost: Precinct 1, $225,000; Precinct 2, $165,000; road construction, grading, cost: Precinct 3, $235,000; Precinct 4, $90,000, three accounts. Grand total $615,000. CD 2/16.

EARTHWORK, WATERWAYS

CONTRACTS AWARDED

† N. J., East Orange—U. S. Eng., 60 Lafayette St., New York 13, N. Y., site preparation, excavation and storm sewers at Veterans Admin. Hospital, Tremont Ave. and Center St., Apx. $2,000,000. CD 3/15. to Thatcher Contr. Co., 265 Prospect Rd., Mt. Vernon, N. Y., $1,124,100. CD 3/6.

AIRPORTS

BIDS ASKED

Conn., Bridgeport—AIRPORT—Bids Asked—City Mayor Jasper McLevy, mayor City Hall, Bridgeport, to bid runways surfacing, 10 ft. runways, storm sewer, lighting, marking, and runway clearing, Stratford, $500,000. Lawyer Steward & Weed, 1661 Park Ave., New York N. Y. engrs. CD 6/8.

CONTRACTS AWARDED

Wash., Seattle—KING-WAY—Port of Seattle, Bell St. terminal, 1st Ave. to Western, and connection to runways at Seattle Tacoma Airport to Fogerty Blvd., 1100 Leary Way, $354,988, Est. $400,000. Bids 3/28. CD 3/23.

PUBLIC BUILDINGS

BIDS ASKED

▲ Conn., Bridgeport—HOUSING—B. A. 4/17—Bridgeport Housing Auth., 52 Arctic St., Housing for 1,000 families, $14,000,000. Plans deposit $100. Extended date. Lindsay & Johnson, 214 State St., Albany, engrs. CD 3/15.

† N. M., Los Alamos—[illegible] Atomic Energy Community, Los Alamos, N. M. Community Recreation School, $600,000-$800,000. Plans deposit $50. Extended date. CD 3/16.

LOW BIDDERS

Conn., Westport—HOUSING—Town of Westport Housing Auth., A. J. Forjac, Inc., Westport, Mar. 24, 60 family home units, Hale Farm Green Farms Rd., from Bd. Plans deposit $100. 400 Reservoir Ave., Bridgeport, $312,975. CD 3/9.

Mass., Attleboro—SCHOOL—City Supt. Schools, 34 Sanford St., Attleboro, Mar. 27, brick, steel, Junior High School, Brownell Property, from Thos. Burns County Co., 38 Colonial Ave., Newtonville, $670,392. CD 3/2.

▲ Mass., Wellesley—SCHOOL—Town Bldg. Comm., Mar. 21, 2 story, flat, brick, steel, concrete Junior High School, Kingsbury St. from Bldg. Comm., Municipal Bldg., Mystic Ave., Medford, $1,364,700. Est. $1,400,000. CD 3/16.

Pa., Nanticoke—BOILER & ANT.—Dpt. Property & Supplies, Room 1, Municipal Bldg., Wednesday, Mar. 29, general contract and equipment for Nanticoke Municipal Light Plant, Municipal Bldg., Nanticoke, Pa., Bids 10 a.m., $93,854. [illegible]

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, pipelines, waterways $50,000; other public works $50,000; industrial buildings $60,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply — Power—Nuclear
Sewers, Waste Disposal — Power—Conventional
Bridges — Industrial Buildings
Streets & Roads — Commercial Buildings
Earthwork, waterways — Public Works

Stages Reported

PREPARED BIDS: Following appointment of engineers or architects.

BIDS ASKED: New improvements only. For full report see also preceding issues of ENR.

LOW BIDDERS: Jobs below $600,000 value all low bidder news will be the first reports published. Some projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

▲ Tex., Plainview—HIGH SCHOOL—Plainview Independent School Dist., Plainview, Mar. 28, high school addition and remodeling, from Tom McLeod Co., 1013 E. Broadway, Fort Worth, $1,090,605. CD 3/16.

CONTRACTS AWARDED

Conn., East Hartford—[illegible] Fuller Brush Co., [illegible] Hartford, $884,000. Bids 3/17. CD 3/24.

Ill., Normal—COMMERCIAL—[illegible] Shopping Center, [illegible] $468,000. Bids 3/24, awarded 3/29. CD 3/2.

Mass., Fall River—[illegible] Fall River Housing Auth., 230 family project, [illegible] Assoc., Fall River, $915,148. Bids 3/21. CD 3/16.

Mass., Weymouth—[illegible] Weymouth Housing Auth., 89 Middle St., 2 story, [illegible] brick, steel, concrete, [illegible] Weymouth, $992,000. Bids 3/21. LD 3/21 on LD.

Mich., Northville—ADMINISTRATION—State Hwy. Admin., Div. 111A, State Office Bldg., Lansing, 1 story and basement, [illegible] Northville State Hospital, to Morse Steel Co., 1252 Holden Ave., Detroit, $959,750. Bids 3/14. CD 3/21, under LB.

COMMERCIAL BUILDINGS

SOON LETS CONTRACT

Calif., Auburn—CHURCH—Roman Catholic Church, Sacramento Diocese, Sacramento, soon lets contract for Leo J. Meyer Memorial Church, one 1 story and basement, [illegible] Auburn, $250,000. Harry J. Devine, 1012 Jay St., Sacramento, archt.

Calif., San Francisco—OFFICE—Hewlett Realty, 1161 Market St., San Francisco, soon lets contract 2 floors and [illegible] service, [illegible] office addn., and [illegible] Approx. $200,000.

Mass., Salem—[illegible] James R. C. Parish, Michael J. Coffey, pastor, 141 Endicott St., Boston, soon lets contract 2 story brick, steel and concrete [illegible] Apx. $250,000. Bldg. Comm. Archt. Jamaica Plain, archt. CD 3/16.

CONTRACTS AWARDED

Calif., Hayward—RESIDENCES—Eden Development Inc., 1441 Franklin St., Oakland, [illegible] Hayward Blvd., Hayward, from Wm. R. Strandberg & Frederick, 1441 Franklin St., Oakland, $469,000.

Ill., Chicago—HOSPITAL—Michael Reese Hospital, Nelson and Chatham Aves., 2 story, [illegible] brick, concrete, steel Hospital addn. to J. W. Snyder Co., 431 S. Dearborn St., Chicago, $460,000. Bids 3/21, awarded 3/28. CD 2/3.

Neb., Lincoln—HOUSING—Lincoln Housing Inc., Sharpe Bldg., low rental housing, Owner builder, Approx. $500,000.

▲ N. J., Paramus—HOUSES—Reeves Homes, Inc., Hudson Brunswick prks., c/o Percy L. Clinton, archt., Jericho Turnpike, Mineola, L. I., 75 Homes at $12,500 each, 75 at $13,500 each. Owner builds. $1,000,000.

N. Y., Brooklyn—APARTMENTS—Canin Realty Corp., 420 Ocean Ave., 6 story apartment, 18-32 Windsor Ave., $344,700; 6 story apartment, 27-37 Cooke Ave., $274,000. Owner builds. CD 3/16.

N. Y., Jackson Heights—APARTMENTS—Jeffree Realty Co., c/o H. I. Feldman, archt., 415 Lexington Ave., New York, Zone 17, 6 story apartment [illegible] Ave., and 89 St., Elmhurst, $550,000.

N. Y., Jamaica—APARTMENT—Sales Building Corp., 420 Ocean Ave., Jamaica, L. I., 6 story, New York, Zone 8, 6 story apartment, Wexford Terrace, east of Ave. N. Owner builds. $550,000. CD 3/16.

▲ Tex., Dallas—HOUSING—W. W. Winnes, Inc., 1613 Avery St., Dallas, 2 story, [illegible] Dallas Housing Authority, 1340 Avery St., Dallas, Approx. $1,000,000.

Tex., Houston—HOUSING—Houston Housing Auth., 5 Allen Center Bldg., 69 dwellings, Harris Co., Houston, $494,750. 69 dwellings, Houston, $353,000. Owner builds. CD 3/16.

Tex., San Antonio—HOUSING—[illegible] J. W. Stark, 302 College St., 64 dwellings, Owner builds, Approx. $540,000. CD 3/24.

▲ Que., Montreal—OFFICE—Dominion Textiles Co., 555, 710 Victoria Sq., office to Foundations Co. of Canada Ltd., 1900 W. Dorchester St., Approx. $1,250,000. H. P. Wilgar, 3411 Crescent St., archt.

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INDUSTRIAL BUILDINGS

SOON LETS CONTRACT

Ark., Camden—WAREHOUSE, etc.—Ouchita Rural Electric Co-operative, Camden, soon lets contract warehouse and office, Erhart, Eichenbaum & Brauch, Wallace Bldg., Little Rock, archts.

O., Willoughby—SALES and SERVICE—Glasscock Chevrolet, Third St., soon lets contract sales and service bldg., $100,000. W. A. Bingham, 18001 Waterloo Rd., Cleveland, archt. CD 3/29.

Pa., Arnold—BOTTLING PLANT—Coca Cola Bottling Co. of Pennsylvania, 3772 Center Ave., Pittsburgh, soon lets contract, 1 story, 80x200 ft., concrete block, steel frame bottling plant, concrete slab floor $75,000. Robert & Co. Assoc., Inc., Bona Allen Bldg., Atlanta, Ga., archts.

Ont., Toronto—FACTORY—Lawson, Stratton, Green & Dugley, archts., 372 Bay St., Toronto, soon lets contract 3 story, 61x98 ft., steel concrete block, factory, 312-18 Richmond St. W., for Haworth & Smith, 218 Richmond St. W., Approx. $350,000.

LOW BIDDERS

Minn., Elk River—PLANT ELECTRIC INSTALLATIONS—Rural Co-operative Power Assn., Elk River, Mar. 17, electric installations for power plant and substation, Elk River, from Kenne Electric Co., 722 Raymond Ave., St. Paul, $179,927. CD 2/13.

CONTRACTS AWARDED

Pa., Etna — MANUFACTURING — Spang Chalfant Co., Grant Bldg., Pittsburgh, 50x300 ft. mfg. bldg., separate contracts, $125,000.

Tex., Houston—PLANT—Allied Chain Link Co., 425 W. 25 St., plant, to Manhattan Constr. Co., 2828 Pease Ave. Approx. $70,000. Charles Chan, 1006 Berry St., archt. CD 1/25, under CA.

UNCLASSIFIED

BIDS ASKED

† N. J., Edgewater—PIER—B.A. 4/18—Pub. Wks. Office, 3rd Naval Dist., 90 Church St., New York, 7, N. Y., demolition Pier 2, Naval Medical Supply Depot Annex. Plans deposit $10.

▲ Texas and Louisiana—GAS LINE—Bids Asked—Transcontinental Gas Pipe Line Co., Oil and Gas Bldg., Houston, Tex., 514 mi. 20- to 30-in. natural gas line between Mercedes, Tex. and Eunice, La. $21,616,000. CD 2/26/47.

SOON LETS CONTRACT

Conn., Bridgeport—CEMETERY IMPRVS.—Mt. Grove Cemetery Assn., 2675 North Ave., soon lets contract 1 story, 52x90 ft., steel, brick, granite crematory-maintenance unit, cremation furnaces, garage North Ave. and Dewey St., $200,000. Charles Wellington Walker, 114 State St., archt.

LOW BIDDERS

Tex., San Angelo—TRACK RELOCATION—Gulf, Colorado & Santa Fe Ry. Co., W. T. Donoho, acting ch. engr., Rosenberg and Strand Sts., Galveston, Mar. 23, track relocation, etc., from Allhands & Briley, 1009 Southwestern Life Bldg., Dallas, $210,885. CD 3/14.

CONTRACTS AWARDED

Conn., Bridgeport—FIELD HOUSE—City, Jasper McLevy, mayor, City Hall, 2 story, 40x50 ft., brick Harvey Went Field House Wordin Ave. to Berkshire Constr. Co., 281 Fairfield Ave., $50,000. Herbert Morton, 164 State St., archt.

Texas—CRUDE OIL LINES—Magnolia Petroleum Co., 1009 Fannin St., Houston, 55 mi. 4- to 24-in. crude oil gathering lines, LaWard and Lolita Fields, to Henry L. Lemon & Co., Driscoll Bldg., Corpus Christi, Approx. $485,000. CD 3/19/47.

PROPOSED PROJECTS

WATER SUPPLY

Calif., Davis—City, City Hall, voted $125,000 bonds water supply imprvs. L. Cedric Macabee, 156 University Ave., Palo Alto, engr., A. M. McKinnon, City Hall, city engr. CD 12/23.

Ky., Campellsville—City, City Hall, WW imprvs., incl., reservoir, treatment plant, elevated tank, distr. sys. imprvs., $350,000. J. S. Watkins, 149 High St., Lexington, consult. engr.

O., Munroe Falls—Village, Mayor William Shakespeare, Munroe Falls, water sys., water to be piped here from Cuyahoga Falls waterworks, booster pump, standpipe, hydrants, lines, $200,000.

O., Russellville—Village of Russellville, Charles M. McKinley, mayor, City Bldg., water treatment plant, 19,141 ft. 4- to 8-in. distr. lines, appurtenances, $130,000. Thomas Cureton, Higginsport, consult. engr.

▲ Okla., Oklahoma City—City, City Hall, bond election May 9, addnl. filter plant, pump, equip., 147 mi. addnl. water mains in the distr. sys., $10,048,000. H. E. Chase, Municipal Bldg., engr. CD 1/22/48.

(Continued on page 93)

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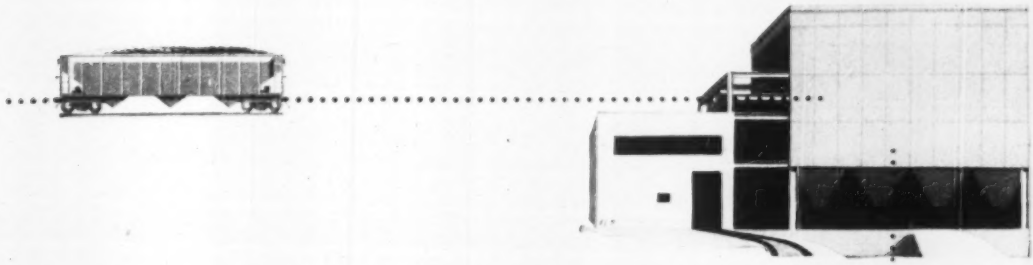
HOW TO REGULATE A "RAT-HOLE"

...and insure smoother, safer, gravity flow of materials from bunkers or hoppers



In designing equipment for the Gilbert Station of New Jersey Power and Light Company, provision was made to eliminate "arching" or "rat-holing" in coal bunkers to guarantee smooth flow to the direct-firing pulverizers. A 1400-ton bunker was constructed, the bottom five feet and four noses of which were built of monel-clad steel. The monel surface minimizes abrasion intensified by chemical corrosion, eliminating the packing of moist fines which leads to "arching" or "rat-holing". Steady feed is maintained without use of vibrators or a stand-by man. Both costs and danger of expensive firebox explosions caused by spotty stoking have been sharply reduced.

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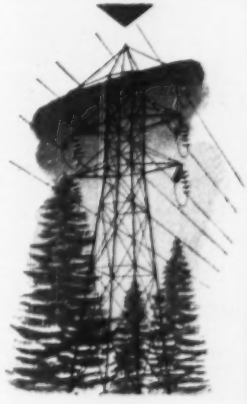

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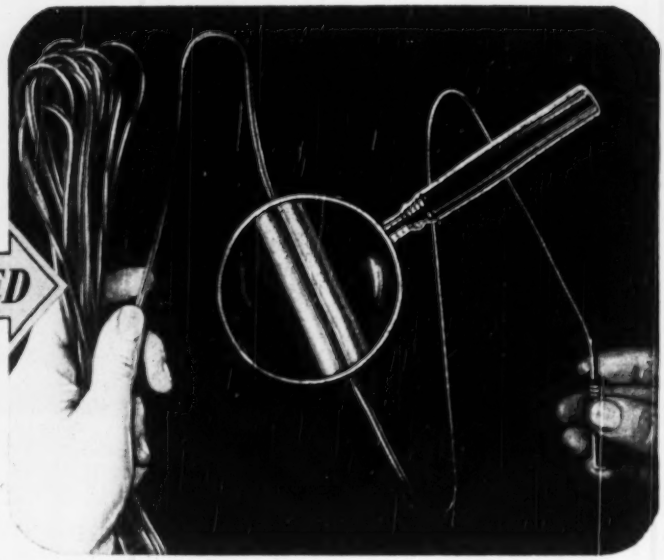

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(Continued from page 90)

Okla., Wagoner—City, voted bonds, WW extens., $158,000. Wood & Craig, Philtower Bldg., Tulsa, consult. engrs.

▲ Tex., Abilene—City, Hudson Smart, mayor, Abilene, reconstruct and new lines for water distr. sys., $550,000; water supply facilities, $200,000; pumping plant, $150,000; water storage, $120,000.

Tex., Houston—Home Owned Properties, Inc., Scanlan Bldg., 2nd sect., WW sys., $150,000. E. S. & Robert M. Atkinson, 1st Natl. Bank Bldg., consult. engrs.

Tex., Sundown—City, L. S. Dudley, mayor, Sundown, WW improv., incl. purchase privately owned water sys. and improv. by installing fire mains, hydrants, etc., $177,170. Parkhill, Smith & Cooper, 1006 14 St., Lubbock, consult. engrs. CD 7/26.

SEWERS, WASTE DISPOSAL

Calif., Davis—City, City Hall, defeated $50,000 bonds, drainage improv.; voted $260,000 bonds, sewerage sys. L. Eric Macabee, 156 University Ave., Palo Alto, engr. A. M. Wakeman, City Hall, city engr. CD 1/3.

Calif., Los Angeles—Bd. Supervs., Los Angeles Co., 501 Hall of Records, sanitary sewers on Homer Ave. and other streets, Altadena, Co. Dist. 1353, $114,100. C. F. Arnold, co. engr.

Colo., Denver—City and Denver Co., City & County Bldg., East Side Sewer Dist. 6, north of E. 37 Ave. and east Holly St., Approx. $50,000; East Side Sewer Dist. 7, north of E. 32 Ave. between Holly and Dahlia Sts., Approx. $50,000. Terry Owens, city engr.

Colo., Lakewood—West Lakewood Sewer Dist., Lakewood, sanitary sewers to serve west Lakewood, $200,000.

Kan., Leavenworth—City, City Hall, sewage plant, $844,460. W. M. Small, city engr.

Ky., Harrodsburg—City, City Hall, sewerage treatment improv., addn., $150,000. Howard S. Bell, 553 E. Limestone St., Lexington, consult. engr.

N. C., Williamston—Town, sanitary sewerage sys. extens., $100,000.

▲ Okla., Oklahoma City—City, City Hall, bond election May 9, North Side sewage treatment plant, addn., plant, Bone sanitary sewer, $4,540,000; storm, storm sewers, $2,710,000. H. E. Chase, Municipal Bldg., engr. CD 12/5/45.

Okla., Wagoner—City, voted bonds, sanitary sewer extens., $127,000. Wood & Craig, Philtower Bldg., Tulsa, consult. engrs.

Pa., Norwood—Wickin-gates Auth., c/o Damon & Foster, engrs., Sharon Hill, sewerage disposal plant, $940,000.

Pa., Sharon—City, $250,000 bond election May 16, sewerage plant.

▲ Tex., Abilene—City, Hudson Smart, mayor, Abilene, existing sys., sanitary sewerage sys. rehabilitation, $200,000; sewage disposal, $386,000; sanitary sewer connection lines, $450,000.

Tex., Houston—Home Owned Properties, Inc., Scanlan Bldg., second sect., WW sewer construction, incl. $150,000 sewage disposal plant, $125,000 storm sewers, $125,000. E. S. & Robert M. Atkinson, 1st Natl. Bank Bldg., consult. engrs.

Tex., Sundown—City, L. S. Dudley, mayor, Sundown, sanitary sewerage sys. improv., $100,204. Parkhill, Smith & Cooper, 1006 14 St., Lubbock, consult. engrs.

Wis., Phillips—City, sewage treatment plant, $101,000. Oleo Eng. Co., 502 Main St., La Crosse, consult. engr.

Wis., Washburn—City, intercepting sewers and sewage treatment plant, $124,000. Oleo Eng. Co., 502 Main St., La Crosse, consult. engr.

Alaska, Wrangell—City, City Hall, sewerage sys., $125,000. A. Ericson, Ketchikan, consult. engr. CD 11/14/45.

BRIDGES

O., Youngstown—City, City Hall, and Baltimore & Ohio R.R. System, A. C. Cloyes, Ch. Engr., Baltimore and Charles Sts., Baltimore, Md., repair temporary wooden Division St. Bridge approach, replace temporary spans, $117,470; build steel ramp with concrete abutment over present ramps and construct west pit approach, by bids to $108,405; remove present floor and stringers, repair bents, replace new steel stringers, new floor, replace guard rails, $72,000. James C. Rudy, city engr. CD 11/24.

Tex., Abilene—City, Hudson Smart, mayor, Abilene, bridge and culvert constr., $200,000.

STREETS AND ROADS

Colo., Denver—City and Denver Co., City and County Bldg., C. conc., gutter, curb and conc. walk, and 3 conc. brs., Dexter Ave., Denver, Denver Improv. Dist. 167, $316,300. Terry Owens, City & County Bldg., city engr.

▲ Idaho, Bureau Public Roads, Dept. Commerce, Morgan Bldg., Portland, Ore.

Boise Co., Idaho—4 mi. Kuna-Lowman Rd., near Garden Valley, $60,000.

Bonner Co., Idaho—grading, bridges and misc. Clarks-Sandpoint section, Rd. south of Priest Lake, $325,000.

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Custer Co.—grading, bridges 9.14 mi. Ketchum-Clayton Hy. (Sawtooth Park Hy.) Clayton to Challis. $680,000.
Kootenai Co.—grading 0.9 mi. North Pacific fy. 6 mi. east of Coeur d' Alene. $80,000.
Lemhi Co.—grading 2.6 mi. Sawtooth Park Hy. (Salmon-Montana line) near North Fork. $130,000.
Shoshone Co.—grading, bridge 2.7 mi. Enaville-Murray Hy. south of Pritchard. $400,000.
Valley Co.—grading, blt. 1 mi. North Fork Payette Hy. near Smiths Ferry. $185,000; grading 6 mi. McCall end of McCall-Stibnite Rd., $300,000. W. H. Lynch, div. engr.
▲† **Montana**—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland, Ore.
Flathead Co.—grading 8 mi. Swan River Hy. southeast of Bigfork. $355,000.
Gallatin Co.—grading 6 mi., and constr. bridge above Karst's Camp on-West Gallatin Hy. $200,000.
Glacier Co.—grading 5.8 mi. Columbia Falls-Glacier Park Hy. east from point 9 mi. east of West Glacier. $850,000.
Lincoln Co.—blt. surf. 10.8 mi. Libby state line hy. extend. west from Troy. $115,000.
Missoula and Mineral Counties—grading 6 mi. Lewis and Clark Hy. from Lolo Hot Springs to Idaho line. $375,000. W. H. Lynch, div. engr., Portland, Ore.
▲ **New York**—Dpt. Pub. Wks., Albany.
Albany Co.—two 36 ft. roadways with mall from bridge to Holland Ave.; two 24 ft. separated roadways from Holland Ave. to the Thruway, Southern Expressway, Dunn Memorial Bridge west along Arch St., along south edge of Lincoln Park and south on new right-of-way to Catskill Thruway 2.1 mi. $7,346,000.
40 ft. pavement from bridge to Thacher St., two 24 ft. roadways with mall to north city line, Riverfront Route, Dunn Memorial Bridge north along Quay St., Erie Blvd. and new right of way to north city line, 2.6 mi., $3,871,000.
two 24 ft. roadways with mall, Northside Arterial; Riverfront Arterial near Thacher St. on new right-of-way to Dudley Park and along southern edge of park to Northern Blvd., 0.9 mi., $1,429,000.
two 24 ft. roadways with mall from Southern Exp. to Holland Ave. and connections to Lark and Dove Sts. on limited access roadways 24 ft. wide, 1 ft. pavement on Dove and Lark Sts. north to Elk St., two 24 ft. roadways each with mall from Elk St. to Loudonville Rd., Crosstown Arterial, from Southern Exp. near Delaware Ave. along new right of way to Lark and Dove Sts.; Lark St., one way north to south from Washington Ave., Dove St., one way south from north to Elk St., then north on new right-of-way to Northside Arterial, Northern Blvd. and way to Loudonville Rd. to the city limits, 3.2 mi., $4,076,000.
Rensselaer Co.—two 32 ft. roadways with 4 ft. flush mall from Broadway to Aiken Ave. on Columbia St., Rensselaer Arterial, Dunn Memorial Bridge on new right-of-way and Columbia St. to the east city line, 2.9 mi., $1,000,000.
two 24 ft. roadways with mall, Riverfront Route, from north city line along Erie Canal bed and new right-of-way to Troy, Menands Bridge, 2.1, $1,135,000. Total $18,903,000.
▲ **Okla., Oklahoma City**—City, City Hall, bond election May 9, traffic arteries, $6,500,000. H. E. Chase, Municipal Bldg., engr.
Tex., Dallas—Hub Hill & Assoc. Andrews Bldg., street constr., paving, Melrose Estates, 218-acres, with 1,245 lots. $120,000.
Tex., Houston—Home Owned Properties, Inc., Scanlan Bldg., second-sect. new streets, incl. slab and concrete paving. $275,000. E. S. & Robert M. Arkwright, 1st Nat'l. Bank Bldg., consult. engrs.
Tex., Sealy—City, 10 mi. flexible base, asph. pavement, concrete curbs and gutters. $275,000. Mitchell & Hunt, 1519 Transit Tower, San Antonio, consult. engrs.
Tex., Sundown—City, L. S. Dudley, mayor, Sundown, street improv., incl. concrete curb and gutter, flexible base and asph. surf. various streets. $185,200. Parkhill, Smith & Cooper, 1006, 14 St., Lubbock, consult. engrs.
† **Washington**—Bureau Public Roads, Dpt. Commerce, Morgan Bldg., Portland, Ore.
Clallam Co.—grading 5 mi., Olympic Hy. from 5 mi. south of Forks to Hoh River. $190,000.
Lewis Co.—blt. 12.5 mi. Randle-Yakima Hy. beginning 8 mi. northeast of Packwood. $390,000.
Okanogan Co.—blt. 15.6 mi. Loup Hy. from 5 mi. east of Twisp to Loup Creek. $235,000.
Stevens Co.—grading, 2 mi. Republic-Kettle Falls Hy. beginning 16 mi. est of Kettle Falls to Que. $300,000. W. H. Lynch, div. engr. CD 4/18/49.

EARTHWORK, WATERWAYS

▲ **Okla., Oklahoma City**—City, City Hall, bond election May 9, flood control of the North Canadian River through the city for Oklahoma City. $2,775,000. H. E. Chase, Municipal Bldg., engr.
▲† **Texas**—Bureau Reclamation, Southwestern Bldg., 19 and C Sts., N.W., Wash. 25, D. C., water storage dam for domestic purposes, at Oakville near Three Rivers. Approx. $28,000,000. H. P. Burleigh, Amarillo, area engr. CD 6/23/44.

AIRPORTS

† **Ind., Fort Wayne**—HANGAR—State Air National Guard, Brig. General Robinson Hitchcock, adjutant. 2 story, permanent hangar, National Guard Base Field. $400,000.
Neb., Scottsbluff—ADMINISTRATION BLDG.—City, plans by F. N. McNett, Scottsbluff, administration bldg. at Municipal Airport. $100,000.
Okla., Oklahoma City—AIRPORT—City, City Hall, bond election May 9, airport expansion. $6,000,000. H. E. Chase, Municipal Bldg., engr. CD 1/12/45.
Tex., Abilene—AIRPORT—City, Hudson Smart, mayor, addnl. municipal airport constr., improv. $300,000.
▲† **Tex., San Antonio**—APARTMENTS, etc.—U. S. Govt., Lackland Air Force Base, San Antonio, completion of apartment-type personnel housing, $750,000; rehabilitation air force base housing and erection several special bldgs. for training, $753,000.

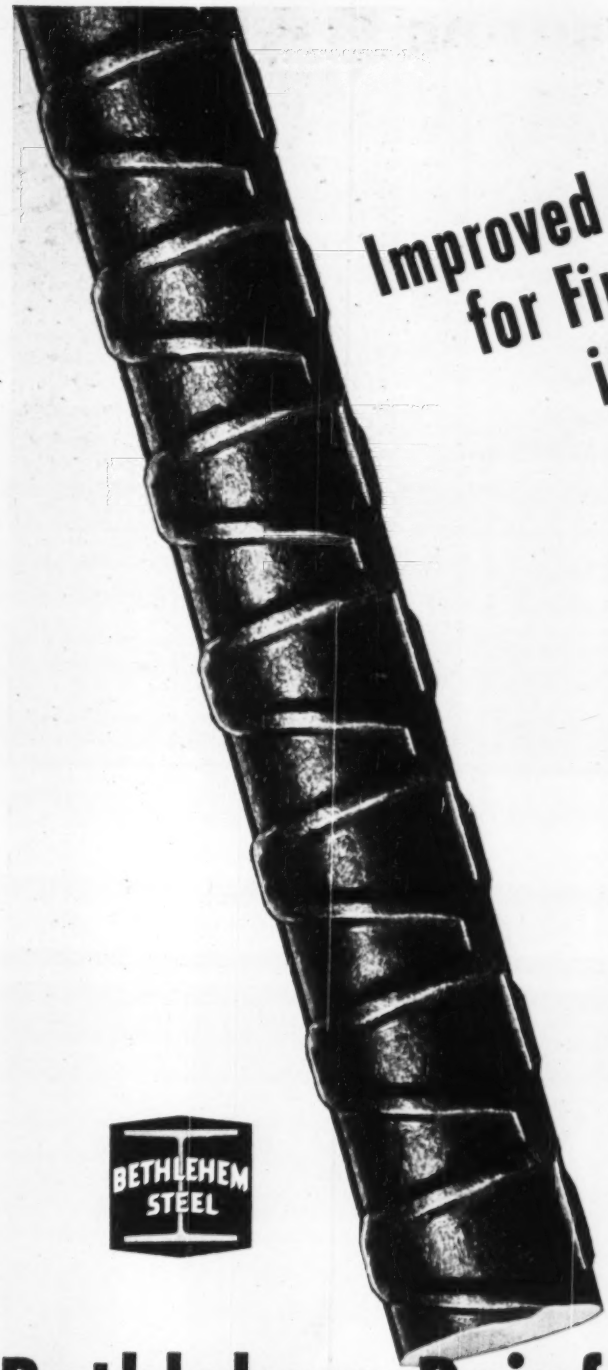
LATIN AMERICA

Chile, Santiago—Govt. of Chile, Santiago, plans aluminum sheet mill. $500,000. Chilean Comm. of New Industries, Santiago, engrs.
Colombia, Bogotá—Fabrica de Galletas y Confites, Medellin, plans factory, mfg. biscuits. $500,000.
Colombia, Medellin—Fabrica de Galletas y Confites, Medellin, plans food factory. $500,000.
Cuba, Havana—City, plans 650 ft. tunnel between The Central Park end of the Prado in the city to the east side of Morro Castle passing under Havana Harbor. Approx. $20,000,000. Rader, Knappen, Tippetts Eng. Co., 1615 duPont Bldg., Miami 32, Fla., U.S.A., consult. engr.
Guatemala, San Jose—Republic of Guatemala, Guatemala City, plans harbor. $1,000,000. Ministry of Works, Guatemala City, engr.
Mexico—Petroleos Mexicanos (Pemex), Jarez 104 Mexico, D. F., Mexico, plans shipyard, Vera Cruz. $10,000,000; lubricants plant, site being selected. $500,000; oil refinery on Pacific coast, site being chosen. $5,000,000; hospital each in five oil fields, schools in 14 work centers each in five oil fields. $500,000; 250 mi. gaseoduct, Brasil Poza Rica. $3,500,000; 165 mi. gaseoduct, Reynosa-Torreon. $3,000,000; 90 mi. gaseoduct Matamoros-Mission, Tamaulipas State. $2,000,000.
Mexico, Ciudad Madero—Mexican Govt., Srio de P. F., Mexico, D. F., plans technological institute. $400,000.
Mexico, Mexico City—Mario Morenc, Balderas 32, Mexico, D. F., plans by Carlos Reygadas, apartment-store. $300,000. Gabino Barrera, 113-3, Mexico, D. F., consult. engr.
Mexico, Misantla—Municipal Govt., Palacio Municipal, Misantla, plans 100-bed public general hospital. $300,000.
Mexico, Puebla—I. M. de S. S., Rosales y Ignacio Mariscal, Mexico, D. F., plans social insurance center. $350,000.
Mexico, Reynosa—PeMex, c/o Antonio Bermudez, mgr., Mexico City, plans gas plant. $200,000.

PUBLIC BUILDINGS

▲ **Ark., Little Rock**—HOSPITAL UNITS—Arkansas State Hospital of Nervous Diseases, Markham and Elm Sts., plans by Trapp & Clippard, Pyramid Bldg., Little Rock, rebuilding sanitary system at Little Rock incl. 7 hospital bldgs., central kitchen and living room other bldgs. $10,674,200. CD 4/17/49.
▲ **Calif., Burbank**—PLANT—City, $2,500,000, bond election June 6, enlarging electrical generating plant. J. H. McGimbridge, supt. CD 1/5/45.
▲ **Calif., San Bernardino**—SCHOOL FACILITIES—City High School Dist., voted $3,850,000 bonds, school facilities. CD 2/28.
Calif., Santa Fe Springs—SCHOOL FACILITIES—Little Lake School Dist., voted $500,000 bonds, school facilities.
▲ **Calif., Torrance**—SCHOOL—Torrance Unified School Dist., voted $2,000,000 bonds, addnl. school facilities. Daniel, Mann, Johnson, 672 S. Lafayette Park Pl., Los Angeles, archts. CD 1/30.
Conn., Danielson—SCHOOL—Town of Killingly Bd. Educ., 52 Broad St., plans by Carl Malmfeldt Assocs., 36 Pearl St., Hartford, and Chandler & Palmer, 16 Franklin St., Norwich, 2 story, bunnit., brick, steel school. N Main St. $500,000. CD 10/31/46.
Conn., Willimantic—HOUSING—City of Willimantic Housing Auth., J. J. Ashton, chn., plans by Reinhardt & Olson, 171 Washington St., Hartford, 100 family units, FPHA Proj. $400,000.
▲ **Ind., Anderson**—AUDITORIUM—City, City Hall, 7 and Main Sts., auditorium and gymnasium, $1,000,000. Walter O'Connor, city engr.
Ind., Gary—COURT HOUSE—City, City Hall, plans by Joe H. Wistermann & Co., 627 Broadway, court house and jail, Broadway and 11 Sts. $750,000. CD 8/7/45.
Kan., Hugoton—COURTHOUSE—Stevens Co., Hugoton, voted $200,000 bonds, Mar. 7, court house. $475,000. Mann & Co., Hutchinson, archts. CD 2/4/49.
Ky., Burlington—SCHOOL—Bd. Educ., Boone Co., H. N. Ockerman, supt., plans by H. Richard Edisten, 2nd National Bank Bldg., Cincinnati, O., 2 or 3 story, bunnit., brick school. $463,000. CD 12/12/46.
Ky., Erlanger—SCHOOL, etc.—Bd. Educ., Erlanger-Annett Sch. Dist., Bartlett St., plans by Landberg & Landberg, 114 Barfield Pl., Cincinnati, O., 2 story, bunnit., brick high school with gymnasium.
Md., Timonium—SCHOOL—Bd. Educ., Baltimore Co., Susquehanna and Washington Ave., Towson, Luther Jenkins Timonium School, on site west of York Rd. $500,000. Morris R. Baker, c/o owner, constr. engr.
▲ **Md., Towson**—SCHOOL—Baltimore Co., Bd. Educ., Susquehanna and Washington Aves., plans by Smith & Veare, Assoc., 2127 N. Charles St., Baltimore, masonry North Point Junior High School. $2,200,000. Morris R. Baker, Susquehanna and Washington Aves., constr. engr. CD 5/5.
▲ **Mass., Lawrence**—HOUSING—City of Lawrence Housing Auth., 56 Melvin St., plans by Pearson, Alter & James, 351 Essex St., 200 family unit, frame houses, Hancock St. $2,000,000.
▲ **Mass., Worcester**—HOUSING—City of Worcester Housing Auth., 22 Elm St., 600 unit housing, Home Farm Site. Approx. $6,000,000.
Minn., Mound—SCHOOL—Bd. Educ., D. G. Nelson, supt., plans by Harby, Bissell & Belair, 1111 Nicollett Ave., Minneapolis, 2 story school, $500,000, $800,000 bonds voted. CD 3/14.
▲ **Minn., St. Louis Park**—SCHOOLS—Bd. Educ., H. Erestvedt, supt., plans by Harby, Bissell & Belair, 1111 Nicollet Ave., Minneapolis, 2 elementary schools, high school addn., 3rd grade school. $1,650,000 bonds voted. CD 1/26.
Minn., Willmar—SCHOOL—Bd. Educ., A. M. Wisness, supt., plans by Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, and Frost & Listrom, assoc. archts., Willmar, school. Approx. $400,000.
Miss., Alcorn—DORMITORY—State Bldg. Comn., Jackson, dormitory addn., Alcorn College. $485,000.
Miss., Columbus—SCIENCE—State Bldg. Comn., Jackson, science bldg., Mississippi State College for Women. $650,000. CD 4/10/47.
Miss., Greenville—SCHOOL—City, Bd. Educ., bond election May 2, Negro Junior-Senior High School. $400,000. N. W. Overstreet & Assoc., 202 N. Lamar St., Jackson, archts. CD 10/21/46.
Miss., Hattiesburg—FINE ARTS—State Bldg. Comn., Jackson, Fine Arts Bldg., Mississippi Southern College. $500,000. CD 8/15.
Mo., St. Louis—ARMORY—Missouri Military Dist., c/o Brig. General Richard G. Lindell, Executive Officer, 401 S. 12 St., Zone 2, 160x240 ft., rein.-con., brick armory, 52x128 ft., rein.-con. brick, storage bldg. $500,000.
▲ **N. Y., New York**—SCHOOL—Bd. Educ., 49 Flatbush Ave. Exten., Brooklyn, Zone 1, P. S. 6, Madison Ave. between 81 and 82 Sts. $1,600,000. CD 9/8/48.
▲ **N. Y., New York**—WELFARE CENTER—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by A. J. Daidone, c/o owner, 4 story Harlem Welfare Center, 1941-57 Park Ave. and 101-21 E. 131 St. $1,400,000. CD 11/9/44.
▲ **O., Hamilton**—SCHOOL—Bd. Educ., Harold L. Howard, bus. mgr., 322 Dayton St., plans by Outcalt & Culbertson & Assoc., 1312 Lakeside Square, Cleveland, 2 story, bunnit., brick Adams School. $1,000,000.
O., Howland—SCHOOL—Howland Twp. School Dist., Howland voted $580,000 bonds, school expansion.
Okla., Clinton—WARD, etc.—State Bd. Affairs, Capitol, Oklahoma City, plans by Coston & Frankfurt, Apco Tower Bldg., Oklahoma City, Zone 2, Ward bldg. at Western Oklahoma Tuberculosis Sanitarium. $630,876; plans by Louis C. Williams, 2008 N. Broadway, Oklahoma City, Zone 2, repairing tuberculosis hospital. $115,500.
▲ **Okla., Enid**—DORMITORY, etc.—State Bd. Affairs, Capitol, Oklahoma City, plans by Dow Gummerson, Bass Bldg., employees dormitory at Northern Oklahoma State Hospital. $549,000; plans by Leonard H. Bailey, Colcord Bldg., Oklahoma City, ward bldg. $600,000; plans by M. N. Wheeler, Bass Bldg., school. $225,000.
▲ **Okla., Norman**—WARD, etc.—State Bd. Affairs, Capitol, Oklahoma City, plans by C. L. Monnott, 1915 N. Indiana St., Oklahoma City, Zone 6, ward bldg. at Central State Hospital. $600,000; womens dormitory. $576,000; plans by Hudgens, Thompson & Hall, 1100 W. Main St., Oklahoma City, Zone 2, gymnasium, Hope Hall, and addn. 2 same bldg. $911,000; plans by Conner & Polezny, Keer-McGee Bldg., Oklahoma City, Zone 2, nurses home. $360,000; plans by Paul Harris, Chickasha, employees dormitory. $450,000; plans by John C. Hope, 2042 N. W. 26 St., Oklahoma City, Zone 6, repairing existing bldg. $277,800.
Okla., Oklahoma City—FIRE STATIONS, etc.—City, City Hall, bond election May 9, addnl. fire stations, equip. $600,000. H. E. Chase, Municipal Bldg., engr.
Okla., Oklahoma City—LIBRARY—City, City Hall, bond election May 9, public library. $822,000. H. E. Chase, Municipal Bldg., engr. CD 11/17/48.
▲ **Okla., Pauls Valley**—WARD, etc.—State Bd. Affairs, Capitol, Oklahoma City, plans by Harold Flood, Pauls Valley, ward bldg. at Pauls Valley Reformatory. $538,200; plans by Albert S. Ross, Adv. acute service bldg. $420,000; plans by Maurice Heffey, 2417 N. W. 37 St., Oklahoma City, Zone 6, dormitory bldg. $225,000.
Okla., Pryor—DORMITORIES—State Bd. Affairs, Oklahoma City, plans by Leon Senter, Phillower Bldg., Tulsa, Zone 2, 6 dormitories at Whittaker Orphans Home. $640,000.
▲ **Okla., Supply**—BUILDINGS—State Bd. Affairs, Capitol, Oklahoma City, plans by Sorey, Hill & Sorey, 809 N. W. 36 St., Oklahoma City, Zone 2, mens dormitory at Western Oklahoma State Hospital. $343,000; plans by W. H. Schumacher, Petroleum Bldg., Oklahoma City, Zone 2, special treatment bldg. $315,000; plans by Walter T. Vahlberg, 1517

(Continued on page 97)



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(Continued from page 94)

N. Broadway, Oklahoma City, Okla. 3-s; apartment-dormitory, $600,000. ▲ Okla., Oklahoma City—Oklahoma Petroleum Bldg., 4-story, Zone 2, ward bldg., $227,700; plans by Sullinger & Lawrence, 216 N. W. 23 St., Oklahoma City, Zone 2, ward bldg., $600,000. ▲ Okla., Taft—SCHOOLS—Taft Independent Sch. Affairs Comm., Oklahoma City, plans by Fred E. Swatek, Okla. City, contemplates [illegible] 3-s; [illegible] $300,000; addn., [illegible] by [illegible], $297,500; plans by Wright & Saxton, Muskogee, [illegible] $420,000. Okla., Talihina—HOSPITAL—Talihina Hospital Dist., Talihina, plans by Layton & Smith, Shreveport, La., [illegible] Sanitarium, $672,000. ▲ Okla., Vinita—SCHOOLS—Vinita Independent Sch. Affairs Comm., Vinita, Okla., plans by Bonner & Reid, Oklahoma City, [illegible] 2-s; [illegible] $900,000; plans by A. C. Bossert, Tulsa, [illegible] Kennedy Bldg., Tulsa, [illegible] $420,000; plans by Bonner & Reid, [illegible] $345,000. Okla., Wewoka—SCHOOLS—Wewoka Independent Sch. Affairs Comm., Wewoka, plans by A. C. Bossert, Tulsa, Kennedy Bldg., Tulsa, [illegible] $154,000; plans by A. C. Love, Seminole, ward bldg., $345,000. ▲ Pa., Philadelphia—SCHOOLS—Philadelphia Bd. Educ., 21 and Winter Sts., Philadelphia, plans by Bacharach & Bissell, Inc., Philadelphia, [illegible] $2,500,000; plans by Zantzinger & Borie, Philadelphia, [illegible] $950,000. CD 2-2; plans by Thompson & Wells, 1520 Chestnut St., Philadelphia, [illegible] $1,100,000. CD 2-8-45. ▲ Pa., Philadelphia—SCHOOLS—Philadelphia Bd. Educ., 21 and Winter Sts., Philadelphia, plans by Bacharach & Bissell, Inc., Philadelphia, [illegible] $850,000; plans by H. D. Dietz & Son, 1329 Race St., Philadelphia, [illegible] $450,000; plans by Davis & Pope, 112 [illegible] West Philadelphia, high school [illegible] $257,500. CD 2-2. S. D., Vermillion—HOSPITAL—Clay County, State Ed. Educ., Pierre, plans by Hoyt C. Brotherton & Frisbee, Boyce Greely Bldg., Sioux Falls, [illegible] $600,000. ▲ S. D., Vermillion—SCHOOLS—University of South Dakota, Ed. Educ., Pierre, plans by Hoyt C. Brotherton & Frisbee, Boyce Greely Bldg., Sioux Falls, [illegible] $600,000. ▲ S. D., Vermillion—SCHOOLS—University of South Dakota, Ed. Educ., Pierre, plans by Hoyt C. Brotherton & Frisbee, Boyce Greely Bldg., Sioux Falls, [illegible] $600,000. ▲ Tex., Abilene—SCHOOLS—Abilene Ind. Sch. Dist., [illegible] $500,000; grade school, $250,000; [illegible] $350,000; gymnasium, $400,000. ▲ Tex., Ballinger—HOUSING—Ballinger Housing Auth., O. L. Hudgeston, chmn., Ballinger, 140 low-cost housing units, $1,008,000. Tex., Cooper—HOUSING—Cooper Housing Auth., Wade T. Bledsoe, pres., Cooper, 100 unit low-cost housing, $720,000. CD 3-27. Tex., DeLeon—HOUSING—DeLeon Housing Auth., L. E. Forrest, chmn., DeLeon, 100 unit low-cost housing, $576,000. CD 3-27. ▲ Tex., Ennis—HOUSING—Ennis Housing Auth., Ted Watson, chmn., Ennis, 200-unit housing project, units, $1,450,000. ▲ Tex., Gilmer—HOUSING—Gilmer Housing Auth., E. M. [illegible], chmn., Gilmer, 200 unit housing units, $1,440,000. Tex., Hearne—HOUSING—Hearne Housing Auth., receive plans by [illegible] Brown & [illegible] Austin, [illegible] $300,000; 40 housing units, $300,000. Tex., Liberty—HOUSING—Liberty Housing Auth., [illegible] Liberty, [illegible] $425,000. Marion Knox & Assoc., 4701 Harrisburg Blvd., Houston, [illegible] Tex., Overton—HOUSING—Overton Housing Auth., G. [illegible], chmn., Overton, [illegible] $720,000. Utah, Salt Lake City—SCHOOLS—B.A. Assoc. 5/1—Ed. Educ., Salt Lake City, plans by [illegible] Park School, $550,000. [illegible] Wright, Salt Lake City, units, CD 12-15-48. ▲ Wash., Bellingham—HOUSING—Bellingham Housing Auth., [illegible] $2,200,000. ▲ Wash., Everett—HOUSING—Everett Housing Auth., Everett, [illegible] housing units, $1,200,000. Wash., Finley—SCHOOLS—Kiona-Benton City School Dist., Finley, plans by [illegible] Yakima, high school, $400,000. ▲ Wash., Seattle—LIBRARY—Seattle City, County-City Bldg., Zone 4, [illegible] central library, $3,000,000 and 6-s, $400,000; branch libraries, CD 12-30-48. ▲ Wis., Janesville—SCHOOLS—Janesville, plans by [illegible] Eisle, Potter & Sullivan, 221 E. Broadway St., Madison, [illegible] high school, $3,533,500. ▲ Wis., Milwaukee—CITY HALL—City, plans by Fred A. Wagner, [illegible] $3,250,000. ▲ Alaska, Whittier—PIER—Whittier, [illegible] Ens. 1880, 942 [illegible] Seattle, Wash., Anchorage, fuel, and [illegible] $3,131,000. Ont., London—[illegible] Cooper, [illegible] $500,000; [illegible] and fire [illegible] Agency, $250,000. R. Turnett, [illegible] Ont., Smith Falls—COLLEGIATE—Ed. Educ., Smith Falls, plans by [illegible] Newport, collegiate, $620,000. CD 3-27. Que., Quebec City—GARAGE—Government of Canada, Dpt. [illegible] 1-story garage at King's Wharf, $500,000.

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Que., Val d' Or—HOUSING—Central Mortgage & Housing Corp., McGill St., Montreal, 44 duplex houses, Approx. $600,000.

COMMERCIAL BUILDINGS

Ark., Little Rock—OFFICE—Arkansas Baptist Hospital, 12 and Marshall Sts., 6 story office adjacent to Arkansas Baptist Hospital for doctors offices and other purposes, $500,000. Trapp & Clippard, Rector Bldg., consltg. engrs.

▲ Ark., Little Rock—INFIRMARY—Diocese of Little Rock, 305 W. 2 St., plans by Bruggeman & Swaim & Allen, Gazette Bldg., and Erhart, Eichenbaum & Rauch, Wallace Bldg., St. Vincent Infirmary, $5,000,000. CD 1/31/46.

Calif., Los Altos—DUDE RANCH—Far West Enterprises, Inc., c/o Thos. Butera, pres., Los Gatos, dude ranch on 243 acre Tyon Farm property, $700,000.

▲ Conn., Westport—HOUSING—Mrs. Elizabeth Lyman, Bay St., 100 family unit brick, steel garden apartment, Bay St., $1,000,000.

▲ Del., Wilmington—SHOPPING CENTER—Don A. Lofbis & Assocs., 200 W. 9 St., shopping center development, department store, $15,000,000.

▲ Fla., Jacksonville—HOUSING—The Allied Development Co., Detroit and First Sts., 175 family dwellings on 40 acre tract in West Jacksonville known as Westwood, $1,000,000.

Fla., Pensacola—STORE—D. L. Rand, Pensacola, store, $750,000.

Ill., Chicago—LIBRARY, etc.—University of Chicago, Midway Campus, Zone 37, plans by Shaw Metz & Dolio, 208 S. La Salle St., Zone 4, 6 story, steel, stone, brick library and office, $750,000.

Ill., Harvey ... Y.M.C.A. BLDG. — Y.M.C.A., Harvey, Y.M.C.A. bldg., $725,000. CD 7/19/44.

Ill., Pana—HOSPITAL—Huber Memorial Hospital, c/o Dr. J. J. Franklin, ch. staff, Ramsey, 100 bed brick, concrete, steel hospital addn., $900,000.

Ky., Georgetown—STUDENT UNION ... etc.—Georgetown College, student union and music bldgs., $410,000. CD 9/15/47.

Md., Baltimore—SCHOOL, etc.—Holy Rosary R. C. Church, Rt. Reverend Myer S. A. Wachowiak, 409 E. Chester St., plans by Palmer Fisher, Williams & Nes, 1020 St. Paul St., Baltimore, 4 story, burnt, masonry school, and 3 story, burnt, convent, 400 S. Chester St.

Mo., St. Louis—FRATERNITY HOUSE—Washington University, c/o Arthur H. Compton, chancellor, Lindell and Skinker Blvd., Zone 5, plans by Widenmeyer & Hecker, 111 N. 4 St., Zone 2, 3 and 4 story, 100,000 sq. ft., brick, steel, concrete, Kappa Sigma Fraternity, CD 2/7/47.

N. Y., Auburndale—HOUSES—J. Ingrassia & Sons, c/o J. Herbert Bormeister, archt., 92-21 165 St., Jamaica, 52 houses in area bounded by 189 St., 50 Ave., 192 St. and 48 Ave. $484,000.

N. Y., Douglaston—HOUSES—Art Terrace Builders, Inc., c/o Stanley H. Klein, archt., 89-31, 161 St., Jamaica, 35 one family houses in area bounded by Horace Harding Blvd., 229 St., Cloverdale Blvd. and 67 Ave. $420,000.

▲ N. Y., Forest Hills—APARTMENT—1948 Construction Co., Inc. c/o S. V. Becker, archt., 122 E. 42 St., New York, Zone 17, 6 story apartment, Yellowstone Blvd. from 67 Dr. to 67 Rd. $1,120,000.

N. Y., Forest Hills—APARTMENT—PML Co., c/o Arthur Weiser, archt., 240 Madison Ave., New York, Zone 16, 6 story apartment, 108 St. between 65 Rd. and 66 Ave. $700,000.

N. Y., Flushing—HOUSES—Commodore Homes, Inc., c/o Joseph Schafran, archt., 200 W. 72 St., New York, Zone 23, 115 houses in area bounded by 58 Rd., 150 St., North Hempstead Turnpike and 148 St. $428,000.

N. Y., Forest Hills—APARTMENT—Forest Realty Corp., c/o Jacob W. Sherman, archt., 26 Court St., Brooklyn, Zone 2, 6 story apartment, Yellowstone Blvd. and 67 Rd. $950,000.

▲ N. Y., Glen Oaks—HOUSES—Silverstein, Brown, Cohen, Newman & Weisbarth, c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, 132 houses in area bounded by Little Neck Parkway and Central Parkway, 72 Ave. and 152 St. $1,916,000.

N. Y., Jackson Heights—APARTMENT—Alpine Gardens, Inc., c/o Samuel Paul, archt., 164-18 Jamaica Ave., Jamaica, 6 story apartment, 77 St., north of 34 Ave. $972,000.

▲ N. Y., Jackson Heights—APARTMENT—Jackson Apartments, Inc., c/o Philip Birnbaum, archts., 305 W. 42 St., New York, Zone 18, five 6 story apartments, 34 Ave. between 86 and 89 Sts. $3,750,000.

▲ N. Y., Jackson Heights—APARTMENT—Wimberley Gardens, Inc., c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn, Zone 2, 7 story apartment, 35 Ave., north of 37 Ave. $1,575,000.

▲ N. Y., New York—APARTMENT—East End Realties, Inc., 30 W. 44 St., Zone 18, plans by Emery Roth & Sons, 14 E. 48 St., Zone 17, apartment, 651-11 East End Ave. and 81-89 East End Ave. $2,000,000.

N. Y., New York—APARTMENT—50 East End, Inc., 191-193 St., plans by Herbert Lillien, 201 W. 72 St., Zone 24, apartment, 50 East End Ave. $800,000.

N. Y., Rego Park—APARTMENT—98 Building Corp., c/o Kaye & Kaveviff, archts., 44 Court St., Brooklyn, Zone 2, 6 story apartment, between 63 Dr. and 64 Ave. $630,000.

O., Dayton—CHURCH, etc.—First Evangelical United Brethren Church, Dr. Paul M. Herrick, pastor, 216 W. 4 St., plans by Clifford Brown, Reibold Bldg., 3 story brick church and parsonage, Salem Ave. and Harvard Blvd. $500,000.

▲ O., Granville—HALL of MUSIC, etc.—Denison University, Dr. Kenneth I. Brown, pres., Granville, hall of music and art on lower campus, incl. recital hall, 600 capacity auditorium, reception hall, etc. $1,000,000.

O., Marion—Y.M.C.A. BLDG.—Young Men's Christian Assn., Marion, Y.M.C.A. bldg., E. Church St. next to postoffice, $750,000.

▲ O., Oberlin—AUDITORIUM—Bd. Trustees, Oberlin College, Oberlin, plans by Harrison & Abramovitz, Rockefeller Plaza, New York, N. Y., auditorium, N. Main St. $1,000,000.

O., Parma—HOSPITAL, etc.—Catholic Charities Bureau, 6753 State Rd., plans by George S. Rider Co., 3800 Terminal Tower, Cleveland, 3 story, burnt, brick, steel hospital and administration bldg., $400,000.

O., University Heights—SYNAGOGUE—Temple Emanuel, 2163 Lee Rd., synagogue, Green and Braintree Rds. $490,000.

O., Youngstown—HOMES—Cosmopolitan Housing Corp., Dollar Bank Bldg., 475 homes in Thorn Hill Village, 130 acre tract, incl. 7 acre shopping center.

Tenn., Memphis—CLOTHING STORE—Julius Lewis, 145 S. Main St., plans by Brocksteins, c/o owner, clothing store, $500,000.

Tex., Brownwood—LIBRARY, etc.—Howard Payne College, c/o J. H. Shelton, bus. mgr., Brownwood, plans by Will N. Noonan, 720 Travis Bldg., San Antonio, 2 story, 80x140 ft., masonry library, concrete fdn., $250,000; 3 story, masonry type girls dormitory, concrete fdn., $300,000.

Tex., Houston—DWELLINGS—Home Owned Properties, Inc., (Scanlan Bldg., Second Sect.), 100 dwellings, $625,000.

Tex., Houston—DWELLINGS—Strickland—Whipple Constr. Co., 1504 Fannin St., 67 dwellings, Donaldyne and Yancey Sts. $675,000.

Tex., Longview—BANK and OFFICE—First National Bank Bldg., plans by Alfred C. Finn, Bankers Mortgage Bldg., bank and office, $750,000. CD 4/23.

▲ Tex., Odessa—HOTEL—Lincoln Hotel, Odessa, 150-room hotel, $1,250,000.

Tex., Rosenberg—CHURCH—Holy Rosary Church, Rosenberg, plans by Mark Lemmon, 1210½ Main St., Dallas, masonry church, $400,000.

Tex., San Antonio—SYNAGOGUE—Agudas Achim Congregation, 108 E. Quincy St., plans by Malcolm Simon, Aztec Bldg., synagogue, $600,000. CD 3/20.

▲ Wash., Sookane—HOTEL—Ridpath Estate, c/o T. Gose, Walla Walla, rebuilding Ridpath Hotel, $1,000,000.

Wash., Tacoma—HOSPITAL—Tacoma Orthopedic Assn., Tacoma, Mary Bridge Memorial Bridge hospital addn., $400,000.

Wis., South Milwaukee—SCHOOL—St. Johns Catholic Congregation, 806 Marquette Ave., plans by A. C. Ronzier, 728 N. Jefferson St., Milwaukee, Zone 2, 2 story, burnt, 60x120 ft., concrete, steel, brick, block parochial school addn.

▲ Wis., Milwaukee—LIBRARY—Marquette University, 615 N. 11 St., Zone 3, plans by Brimeyer, Grellinger & Rose, 757 N. Broadway, Zone 2, main university library, $1,000,000.

▲ Alaska, Seward—HOTEL—T. Orthman, Seward, plans by J. W. Maloney, Central Bldg., Seattle 4, Wash., 100-room resort hotel at Lake Kenai, $1,122,000. CD 2/6.

▲ Alta., Edmonton—HOTEL—Max Cristall & Assoc., Edmonton, plans by C. D. Goodman, 1818 Sherbrooke St. W., Montreal, Que., 8 and 10 story hotel, 101 A St. and 102 Ave. Approx. $1,500,000. CD 5/20/46.

Que., St. Hyacinthe—SEMINARY—Seminaire of St. Hyacinthe, St. Hyacinthe, plans by G. R. Richer, 92 Beloil Ave., Outremont, 5 story, 164x206 ft., concrete, steel, brick, seminary, Girouard St., $500,000.

INDUSTRIAL BUILDINGS

▲ Ala., Birmingham — PLANT—Barrett Div., Allied Chemical & Dye Corp., 40 Rector St., New York, N. Y., roofing mfg. plant, $2,000,000.

▲ Ala., Montgomery—PLANT—Montgomery Advertiser-Journal, c/o Sherlock, Smith & Adams, archts., 301 Washington St., Montgomery, newspaper printing plant addn., $1,000,000.

▲ Calif., Richmond—PLANT—Standard Oil Co. of California, 225 Bush St., San Francisco, conversion of present Termofor Catalytic Cracking Plant at Richfield Refinery, incl. change to new Hondriflow process, $5,000,000-$7,000,000.

▲ Ky., Brandenburg—PLANT—Mathieson Chemical Corp., Whitaker Bldg., Baltimore, Md., plant to convert natural gas by-products to hydrocarbon chemicals, $13,000,000.

▲ Ky., Gabe—PLANT—Tennessee Gas Transmission Co., Commerce Bldg., Houston, Tex., stripper plant to extract hydrocarbons from natural gas, $12,000,000.

▲ Mo., St. Louis—TERMINAL—Missouri Pacific R.R., R. P. Hart, ch. engr., Missouri Pacific Bldg., 13 and Oliver Sts., Zone 3, freight terminal, incl. 3 covered freight platforms, 2 story headhouse, Carroll, Kosciusko and Miller Sts. $1,500,000.

▲ N. C., Burnsville—PLANT—Dorman Corp., Drawer 191, Hazleton, Pa., plans by Lacy, Atherton & Davis, Sterling Hotel, Wilkes-Barre, Pa., weaving plant, $1,000,000. CD 4/1.

▲ N. C., Gastonia—PLANT—Gastonia Combed Yarn Corp., Gastonia, rebuilding, modernizing mfg. plant, $1,000,000.

▲ O., Bucyrus—PLANT—Timken Roller Bearing Co., 1835 Dueber Ave., Canton, 2 plants, 53,600 sq. ft., floor space cup plant and 63,600 sq. ft., cone plant, on 84 acre tract near Route 30, east of here, $4,000,000.

O., Euclid—FACTORY—Phil Mar. Corp., 4712 Chester Ave., Cleveland, 1 story, no bsmnt., brick block factory, St. Clair near E. 260 St. $400,000.

O., St. Bernard—FACTORY—Emery Industries, John J. Emery, pres., June and Long Sts., Cincinnati, Zone 17, plans by W. W. Carlton & Assoc., 5 E. 8 St., Cincinnati, rebuilding 1 story, no bsmnt., 60x105 ft., structural steel factory.

Pa., Phila.—FACTORY—Publicker Industries, 1429 Walnut St., factory alterations, modernization. Approx. $500,000. J. M. McGrath, plant engr.

▲ Tex., Corpus Christi—GRAIN ELEVATOR—Syndicate, c/o John Hansard, Chamber of Commerce, Robstown, 2.5 million terminal grain elevator, $2,500,000.

Tex., Dallas—MOTOR TERMINAL—Fred Gillette & G. Davidson, 2508 S. Harwood St., 1 and 2 story, 60x150 ft. motor terminal, 50x200 ft. service shop, 40x60 ft. wing, steel frame, brick texcrete exterior, 60x200 ft. loading dock, $350,000.

UNCLASSIFIED

Arkansas — TRANSMISSION LINES, etc. — Arkansas Power & Light Co., Simmons Natl. Bldg., Pine Bluff, transmission lines and substation and improv. distr. sys. in Forrest City, St. Francis Co., $376,000.

Colorado—RURAL DISTRIBUTION LINES—Holy Cross Electric Assoc., Glenwood Springs, system improvs., Eagle Co., $195,000.

Illinois — RURAL DISTRIBUTION LINES—Tri-County Electric Co-operative, Mt. Vernon, 97 mi. rural distr. lines and sys. improvs., Jefferson Co., $265,000.

Ill., Mount Carmel—DRIVE-IN THEATER—Keith & Theodore Coleman, c/o American Theatre, Mt. Carmel, 500-car drive-in theatre, on county road known as Swimming Pool Rd., 1½ mi. north of here, Approx. $100,000.

Indiana — RURAL DISTRIBUTION LINES—Tipmont Rural Electric Membership Corp., Linden, 31.25 mi. rural distr. lines, sys. improvs., $455,000. CD 9/2/47.

Ky., Erlanger—STADIUM—Bd. Educ., Bartlett St., Erlanger, stadium.

Nebraska — RURAL DISTRIBUTION LINES — Midwest Electric Membership Corp., Grant, rural distr. lines, Perkins Co., $657,000. Flora Eng. Co., 1717 E. Colfax Ave., Denver, Colo., consult. engr. CD 2/28/47.

N. C., Burlington — SWIMMING POOLS — Burlington Community Swimming Pool, Inc., W. E. Love, jr., chm., Burlington, 2 swimming pools, 1 each in City Park and in Richmond Hill Park, $170,000.

▲ Okla., Oklahoma City—FAIRGROUNDS—City, City Hall, bond election May 9, new Fair Grounds at 10 and May Ave., $4,750,000. H. E. Chase, Municipal Bldg., engr.

▲ Okla., Oklahoma City—PARK—City, City Hall, bond election May 9, addnl. park developments, $2,100,000. H. E. Chase, Municipal Bldg., engr.

Okla., Oklahoma City—TRAFFIC CONTROL—City, City Hall, bond election May 9, addnl. traffic control, $200,000. H. E. Chase, Municipal Bldg., engr.

South Carolina—RURAL DISTRIBUTION LINES—Blue Ridge Electric Co-operative, Pickens, 100 mi. rural distr. lines and sys. improvs., Greenville Co., $320,000.

S. D., Watertown—ARENA—City, plans by Ellerne & Co., E. 505 1st Natl. Bank Bldg., St. Paul, Minn., municipal arena, $350,000.

Tex., Brownsville—RESORT—Cameron Co., c/o Comrs. Court, Brownsville, voted bonds, Site 1, Padre Island resort, playgrounds, park, $850,000. Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York, N. Y., consult. engrs. CD 3/9.

Tex., Sundown—GAS DISTRIBUTION SYSTEM—City, L. E. Dudley, mayor, Sundown, natural gas distr. sys., $100,110. Parkhill, Smith & Cooper, 1006 14 St., Lubbock, consult. engrs.

Wis., Milwaukee—BATH HOUSE—Milwaukee Co. Park Comm., Court House, bath house at McKinley Beach, $100,000. E. A. Howard, c/o owner, engr.

Alberta — NATURAL GAS PIPING — Canadian Western Natural Gas Co., Ltd., Edmonton, natural gas piping and supply to villages of Bowness, Cayley and Coaldale, $150,000.

Alta., Edmonton — RACE COURSE—Northern Alberta Jockey Club, H. R. Milnes, pres., Edmonton, race course and necessary bldgs., $250,000.

B. C., Vancouver—STADIUM—City, 453 W. 12 Ave., baseball stadium, $100,000. Don McRoberts, 1445 Powell St., engr.

B. C., Penticton—ARENA, etc.—Municipality, arena and sports centre, $300,000.

North West Territories, Yellowknife—TELEPHONE LINE—North West Telephone Co., Edmonton, Alta., telephone line from Edmonton linking with Peace River and Yellowknife, $500,000. Matt Berry, c/o owner, engr.

Que., Megantic—DAM—Municipality, dam construction, $100,000.

Que., Peribonka—DAM—Aluminum Co. of Canada Ltd., Arvida, dam, $200,000.

Que., Val d' Or—ARENA—Palais Olympia Inc., Val d' Or, arena, $125,000.

Sask., Regina—UNDERGROUND CONDUIT SYSTEM—Municipality, underground conduit system from Powerhouse 2 to Broad St., $164,000.

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Mass., Bellingham — B.A. 4/17 — Town Bd. Water Comrs., 20,000 ft. c.i. water mains, various extens., 10,000 ft. 6 in. transite pipe. Approx. $39,500.

Ark., Rogers — B.A. 4/18 — 500,000 gal. water tank for city water sys. Marion L. Crist & Assocs., Union Life Bldg., Little Rock, engrs.

Ind., Corydon — B.A. 4/19 — Town Bd. Clerk Kemp., ck. 200, unreas., incl. Div. 1, constr. sys. Div. 2, filter plant, $100,000; Div. 3, elevated steel storage tank, $150,000. Lennox & Mattsfield, 644 E. Maple Rd., ...

Ga., Athens — B.A. 4/19 — City, 750,000 gal. concrete clear water well. Plans deposit $15.

† **Va.**, Chincoteague — B.A. 4/19 — Pub. Wks. Office, Area Engr., Fifth Naval Dist., U. S. Naval Base, Norfolk 2, for 11.5 water line and sewage disposal sys. at Naval Aviation Ordnance Test Station, NOY 25621, 24065. Plans deposit $10.

Tex., Fort Worth — B.A. 4/20 — City, A. O. Jones, mgr., City Hall, reinf.-con. fdn. for 1 mg. elevated water tank, Azle Ave. and McCoines St., $30,000. Plans deposit $10. Del Stephens, city owner, dir. Water Dpt. CD 6/31/44.

Ind., Decatur — B.A. 4/21 — Bd. P. Wks., City Hall, WW supply, water softeners and iron removal plant, $70,000. Zimpro, Inc., Paramount Bldg., Fort Wayne, engr. CD 7/29.

La., Jeanerette — B.A. 4/21 — Town, Town Hall, water supply, extend treatment plant. Plans deposit $25. J. R. McGlothlin Eng. Corp., 22 Marietta St. Bldg., Atlanta, Ga., engrs. CD 8/8 same engr.

La., Morgan City — B.A. 4/22 — St. Mary Parish Waterworks Dist. No. 1, T. F. Sumrall, engr., 108 Lawrence St., Franklin, water supply sys. Plans deposit $25. CD 6/27/48.

Ga., Marietta — B.A. 4/24 — Cobb Co., water sys. extens., incl. 148,410 lin. ft. 6 and 8 in. c.i. pipe, 42,000 c.i. fittings, etc. Plans deposit $25. Merritt & Walker, 206 Roswell St., engrs.

LOW BIDDERS

▲ **Va.**, Norfolk — City, City Hall, Mon. 22, Contr. 7, water purification plant, Moore's Bridges, from Larg Constr. Co., Hampton, $1,582,000. CD 3/16.

CONTRACTS AWARDED

▲ **O.**, Cleveland — City, City Hall, water main in Almira Ave. to Scott Co., 4163 W. 150 St., $1,607,258. Est. $1,500,000. Frank J. Schwemler, Auditorium Bldg., engr. CD 12/10/48.

▲ **Va.**, Norfolk — City, City Hall, Contr. 7, filtration plant addn., 3 brick, reinf.-con., steel bldgs., concrete basins, 9 filters, to Larg Constr. Co., Hampton, $2,623,200. Bids 3/22. CD 3/30, under LB.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Mich., Detroit — B.A. 4/18 — Dpt. P. Wks., 104 City Hall, Contr. PW-1179, backwater gate chamber in Cork Ave. sewer south of W. Jefferson Ave.; regulator chamber with connecting conduits, leading to Cork Ave. sewer and Detroit River Interceptor, in Summit Ave., north of W. Jefferson Ave. Plans deposit $15. R. Thompson, city engr. CD 8/44.

N. Y., Port Jervis — B.A. 4/18 — Bd. Water Supply, 120 Wall St., New York, Contrs. 380 and 381, intercepting sewers, force mains, pump station, sewage treatment plant at Fort Jervis sewerage sys. Plans deposit $35.

S. C., Sumter — B.A. 4/20 — City, City Hall, Green Swamp Sewage Disposal Plant. Plans deposit $20. Palmer & Malone, Sumter, engrs. CD 2-6-50.

Tex., Fort Worth — B.A. 4/20 — City, W. O. Jones, dir. Pub. Wks., Fort Worth, storm sewer relief mains for Camp Bowie Blvd. and W. 7 St., $130,000. Plans deposit $10. C. M. Thelin, c/o owner, dir. Pub. Wks. CD 2-6-49.

Wis., Hortonville — B.A. 4/20 — Village, sewage treatment plant. Plans deposit $10. Foth & Porath, Inc., 409 E. Main St., Green Bay, engr.

Tex., Odessa — B.A. 4/21 — City, 24 and 72 in. storm sewer line exten. in East Central and West sections, $155,000. E. S. Martin, Box 3465, city engr. Kenneth E. Elmore Co., Courthouse, consult. engrs. CD 12-7.

Neb., Sterling — B.A. 4/24 — City, sewers, sewage plant, $64,562. Hennington Eng. Co.; Standard Oil Bldg., Lincoln, engr.

O., Toledo — B.A. 4/24 — Dpt. Pub. Welfare, J. H. Lamneck, dir., Columbus, storm and sanitary sewer at Toledo Training Hospital.

Calif., Hayward — B.A. 4/25 — Ora Loma Sanitary Dist., 15099 Hesperian Blvd., San Lorenzo, sewer collection, outfall and disposal sys., near here. Approx. $50,000. Plans deposit $5. L. Cedric Macabee, 156 University Ave., Palo Alto, engrs. CD 10/28/47.

CONTRACTS AWARDED

▲ **O.**, Canton — City, City Hall, general contract sewage-garbage disposal plant, south of here, to Bliss Eng. & Constr. Co., 215 Birmingham Theatre Bldg., Birmingham, Mich., $2,032,750. Bids 3/22. CD 3/28, under LB.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

April 18	April 26
Massachusetts	California
South Carolina	Delaware
Virginia	April 28
	Alabama
April 19	May 3
Texas	Louisiana

N. Y., New York — B.A. 4/17 — Triborough Bridge and Tunnel Auth., Administration Bldg., Randall's Island. Zone 35, widen toll plaza and incidental work, Triborough and Bronx-Whitestone Bridges. Contr. No. WB-47. Plans deposit $1.50. CD 11/5/45.

New Jersey — B.A. 4/27 — New Jersey Turnpike Auth., War Memorial Bldg., Trenton.

Essex and Hudson Counties — Contr. 20, superstructure steel work for Passaic River Bridge in Newark and Kearney, Sect. 6. CD 7/13, under Streets and Roads.

Tex., Amarillo — B.A. 5/2 — City, N. V. Moss, mgr., Amarillo, W. 6th Ave. overpass over Chicago, Rock Island and Pacific R.R., $55,000. Plans deposit $15. Freese & Nichols, 407 Gunsight Bldg., Fort Worth, engrs.

New Jersey — B.A. 5/4 — New Jersey Turnpike Auth., War Memorial Bldg., Trenton.

Hudson Co. — Contr. 17 superstructure steel work for Hackensack River Bridge near Laurel Hill, Sect. 7, CD 7/13, under Streets and Roads.

LOW BIDDERS

▲ **Ga.**, Savannah — Seaboard Airline R.R. Co., 147 Granby St., Norfolk, Va., reconstructing railroad bridge across Savannah River from C. K. Thomson, Greenwood, S. C., and McMeekin Constr. Co., Cheraw, S. C. $1,496,886. CD 3/14.

▲ **New Jersey** — New Jersey Turnpike Auth., War Memorial Bldg., Trenton, Mar. 28, Contr. 14, construct south abutment, twenty south approach piers, 3 north approach piers, north abutment and 2 construction road embankments, one each side of river, etc., Hackensack River near Laurel Hill, Sect. 7, Hudson Co., from Cayuga Foundation Corp., 30 Vesey St., New York, N. Y., $1,629,230. CD 3/9.

▲ **Pennsylvania** — State Hy. & Bridge Auth., Harrisburg, Mar. 31, superstructure for continuous truss, deck plate girder and I beam viaduct to carry L. R. 118 (SR) and T. R. 31 over the Monongahela River between Belle Vernon and Speers, 2.114 ft. Washington-Fayette and Westmoreland counties, from U.S. Pitt Bridge Works, 212 Wood St., Pittsburgh, $2,007,145. Est. $1,870,000. CD 3/6.

CONTRACTS AWARDED

▲ **Pennsylvania** — State Hy. & Bridge Auth., Harrisburg, construct 27-span deck plate girder I-beam and rein.-con. T-beam bridges together with grading, paving approaches and connecting side streets; construct pedestrian underpass and rein.-con. box North Bridge over Susquehanna River between Wormleysburg and Harrisburg, 7,990 ft. (LR 770 (2), T 1331, 30 Spur E, 21021 Spur E, 21021 (1), T 9, 24, 25, 22, Dauphin and Cumberland Counties, to Roth & Flinn, 1942 Forbes St., Pittsburgh, $4,765,238. Est. $5,500,000. Bids 3/17, awarded 3/28. CD 3/21, under LB.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

April 18	Minnesota
Illinois	April 26
Maryland	California
Massachusetts	Delaware
South Carolina	April 27
Virginia	California
April 19	New Jersey
Texas	April 28
April 20	Pennsylvania
New Jersey	May 3
April 21	Louisiana
Kansas	Rhode Island

Ont., Brockville — B.A. 4/17 — Town Clerk, Brockville, asph. roads, sidewalks and storm drains, approx. $55,000. Plans deposit $10. O. T. Hueston, c/o owner, engr.

Ia., Belmond — B.A. 4/18 — City, pavement widen. and sidewalk repairs, Proj. SN-1516, Rowat & Murray, Belmond, engrs.

N. C., Statesville — B.A. 4/18 — City, C. L. Linebuck, mgr., paving 26 blocks in city streets, 69,200 lin. ft. concrete curb and gutter, 84,400 sq. yd. top soil, 7,600 cu. yd. unclassified excav. and preparation of 147 storm water catch basins. $210,000.

LOW BIDDERS

▲ **New Jersey** — New Jersey Turnpike Auth., 65 Prospect St., Trenton, Zone 8, rejected bids Feb. 7, Contrs. 3, 3A, and 3B, grading, drainage structures, etc. in connection with constr. New Jersey Turnpike Sect. 1, between Deepwater and Woodbury, Salem and Gloucester Counties, L. B. $2,083,428. CD 2/9, under LB.

▲ **Ohio** — State Hy. Dpt., Columbus, Mar. 28, North Extension of Willow Freeway from Dalton to Bridge Ave., Cuyahoga Co., from Lancaster Bros. Constr. Co., 3600 Ridge Rd., Cleveland, $1,220,343. Est. $1,272,000. CD 3/15.

▲ **Pennsylvania** — State Hy. & Bridge Auth., Harrisburg, Mar. 31, Schedule 1, construct divided highway consisting of rein.-con. pavement, 24 ft. wide on each side of an earth divisor area 20 ft. and variable in width, incl. 3 rein.-con. structures, c. conc. pavement 52 ft. and variable to 58 ft. in width, one I-beam bridge and widen existing pavement with c. conc. pavement variable from 4 to 19 ft. in width on Route 66, Sec. 14-A, Schedule 2, construction of divided highway, consisting c. conc. pavement 24 ft. wide on each side of an earth divisor area 20 ft. and variable in width, 2 rein.-con. concrete divisor areas 20 ft. and variable in width, 2 c. conc. variable 52 ft. to 58 ft. in width, one rein.-con. bridge and one I-beam bridge and existing aggregate base with bit. surf. 50 ft. and variable in width on Route 66, Sec. 14-B, and on I. C. conc. pavement 28 ft. and variable in width and misc. drainage Route 220, 48-A-46 to T. R. 16 and U. S. 220, from point west of Mill Run Springfield Twp. to point in Girard Boro., Erie Co., from Dan Boro Bros. Paving Co., Union Commerce Bldg., Cleveland, O., $2,532,130. Est. $3,608,110. CD 3/6.

CONTRACTS AWARDED

▲ **Pennsylvania** — State Hy. & Bridge Auth., Harrisburg, construct divided highway consisting of two 24 ft. lanes of c. conc. pavement on each side of variable width c. conc. and earth divisor areas, and construction of 3 rein.-con. structures, plastic stone base with bit. surf., 22 ft. and variable 20 to 24 ft. wide with grading, drainage 72 ft. wide and one I-beam bridge and widen present bridge 10.765 ft. L. R. 769 (2), 46172, 11-C, from 0.5 mi. west of north of Gulph Mills to point in Boro of West Conshohocken, a section of the Schuylkill Expressway to link Eastern Terminal of extended turnpike to city of Philadelphia, one of five contracts, Montgomery Co., to J. Gunn & Sons Co., P. O. Box 67, Swarthmore, $1,332,565. Bids 2/24, awarded 3/24. CD 2/20, under LB.

▲ **Pennsylvania** — Pennsylvania Turnpike Comm., 11 N. 4 St., Harrisburg, structures and grading, drainage, paving 9.04 mi., Sect. 30 E, Western Exten. of Turnpike, from point at Butler-Allegheny Co. line, easterly 20,530 ft. to point approx. 534 ft. west of L. R. 02225, and structures, grading, drainage, paving 9.24 mi., Sect. 30 D, Western Exten. of Turnpike, from point approx. 534 ft. west of L. R. 02225, westerly 27,132 ft. point approx. 200 ft. west of west track of B. & O. R. R. in Hampton Twp., both Allegheny Co., to Frank Mastruda Co., William Penn Hotel, Pittsburgh, $4,822,111. Bids 3/14. CD 3/17, under LB.

EARTHWORK, WATERWAYS

BIDS ASKED

† **Virgin Islands**, Charlotte Amalie, St. Thomas — B.A. 4/17 — H. B. Jewell, Jr., deputy comr. Eng. & Constr., Commerce & Facilities Service, General Services Admin., General Service Bldg., Wash. 25, D. C., waterfront improv., St. Thomas, Proj. No. 53-106. Plans deposit $50, adv. ENR 4/13.

† **Maryland** — B.A. 4/18 — U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore, Zone 3, dredging Wells Cove (Chester River) on easterly side of Kent Island Narrows about 0.4 mi. south of fx. Bridge, dredging channel, Queen Annes Co. and Lower Thoroughfare, a tidal estuary on east side of Tangier Sound, an arm of Chesapeake Bay, located on south side of Deals Island near Wenona, about 12 mi. north of Crisfield Harbor, Somerset Co., CIVENG 30-075-50-72, Extended date CD 3/27.

† **New York** — B.A. 4/18 — U. S. Eng., 80 Lafayette St., New York, Zone 1, maintenance dredging approx. 420,000 cu. yd. material from Narrows of Lake Champlain, Washington Co., CIVENG 30-075-50-73, Extended date CD 2/23.

† **Rhode Island** — B.A. 4/18 — U. S. Eng., Bldg. 21, Naval Drydock, South Boston, Mass., stone and concrete breakwater, Point Judith, Eng. 19 016-50-158.

† **Mississippi** — B.A. 4/19 — U. S. Eng., P. O. Box 97, Memphis 1, Tenn., approx. 3 mi. channel clearance, along Muddy Creek in Tippah Co., starting approx. 14 mi. south of Tennessee-Mississippi State line, and extends in southwesterly direction upstream approx. 1 mi. to point immediately north of bridge on U. S. Hy. 72, which is approx. 1¾ mi. east of junction of State Hy. 5 with U. S. Hy. 72, CIVENG 40-041-50-125.

† **Missouri** — B.A. 4/19 — U. S. Eng., 1709 Jackson St., Omaha, Neb., Agricultural Levees, Unit L-536, Sects. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, CD 3/16.

† **New York** — B.A. 4/19 — U. S. Eng., 80 Lafayette St., New York, Zone 1, dredging approx. 1,400,000 cu. yd. all material except ledge rock, from Browns Creek Suffolk Co. Serial No. CIVENG 30-075-50-96.

† **Florida** — B.A. 4/20 — U. S. Eng., 575 Riverside Ave., Jacksonville, Zone 1, Canal and Levee L-8, in Central and Southern Florida Flood Control Proj., near West Palm Beach, CIVENG 08-123-50-73, Extended date CD 3/23.

† **Idaho** — B.A. 4/20 — U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., levees, rough brick, dumped stone revetment and drainage structures between Station L 870 plus 00 and L 975 plus 00 along left bank of Snake River in Jefferson Co., approx. 6 mi. north of Rigby, Serial No. CIVENG 45-145-50-110, CD 4/16/45.

† **Idaho** — B.A. 4/20 — Bureau Reclamation, Dpt. Interior, Burley, drilling Observation Wells 2, 3, 4 and 4 North Side Pumping Div., Minidoka Proj., approx.

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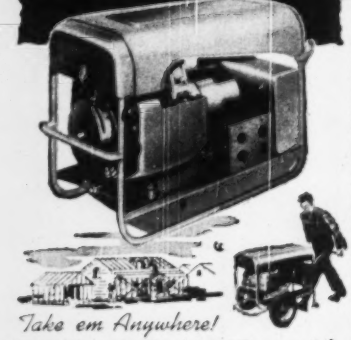

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† **Indiana**—B.A. 4/20—U. S. Eng., P. O. Box 59, Louisville 1, Ky., constr. flood protection works New Albany, Sect. 2, Part 1, located on right bank of Ohio River approx. 608 mi. below Pittsburgh, Pa., beginning near N. E. corner of Fifteenth and Water Sts., exten. downstream generally parallel with Ohio River, ending in Water St. approx. 700 ft. west of Tenth St. in New Albany. CIVENG 15-029-50-83.

La., Alexandria—B.A. 4/20—City, City Hall, storm drainage work, Contr. Proj. 2. Plans deposit $20. Pan American Engineers, 1418 Third St., Alexandria, engrs. CD 11/17.

† **Nebraska**—B.A. 4/20—Bureau Reclamation, Dpt. Interior, Arapahoe, perforated pipe sub-drain for Cambridge Canal, Station 226 plus 00 to 255 plus 05, Missouri River Basin Proj., Frenchman-Cambridge Div. Spec. R7-117 (Region 7). CD 5/25/48.

† **New York**—B.A. 4/20—U. S. Eng., 80 Lafayette St., New York, Zone 13, maintenance dredging, Brown's Creek, Islip, Suffolk Co., Serial No. CIVENG 30-075-50-96. CD 3/20.

† **Ohio**—B.A. 4/20—U. S. Eng., Madison Ave. and 8 St. W., Huntington 26, W. Va., Black Fork Channel Rectification, below Charles Mill Dam, Muskingum River Reservoirs. Serial No. CIVENG 46-022-50-91. CD 2/28.

† **South Carolina and Florida**—B.A. 4/20—U. S. Eng., Post Office Bldg., Savannah, Ga., maintenance dredging 1,085,000 cu. yd. in Wilmington River between Mile 578.3 and Mile 583.4 (a point near Daymark 12 and point about 1,000 ft. south of mouth of Grays Creek at Thunderbolt) of the Atlantic Intracoastal Waterway between Norfolk, Va. and St. Johns River, Fla., Serial No. CIVENG 04-133-50-64. CD 6/9/48.

† **New York**—B.A. 4/21—U. S. Eng., Niagara and Bridge Sts., Buffalo, Zone 7, dredging bearing area for Third Naval Dist., Rochester Harbor. Serial No. CIVENG 30-023-50-32. CD 6/9/48.

† **Oregon**—B.A. 4/21—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., channel, levee and rein.-con. structures along Walla Walla River, Stations 108 to 128 (Sect. 6), Milton-Freewater Proj. CIVENG 45-164-50-108.

† **Florida**—B.A. 4/25—U. S. Eng., P. O. Box 4970, Jacksonville, repairing guide fenders at Volusia Bar, situated at St. Johns River entrance to Lake George, St. Johns River, Jacksonville Dist. Lake Harney, Inc. No. CIVENG 08-123-50-84. CD 11/24/43.

LOW BIDDERS

▲† **Massachusetts**—U. S. Eng., Army Base, Boston, Zone 10, Mar. 23, dredging Fall River Harbor, Bristol Co. CIVENG 10-026-50-57. Tom Gahagan Constr. Corp., 90 Broad St., New York, N. Y., $1,193,500. CD 3/7.

▲† **Texas and Arkansas**—U. S. Eng., foot of Prytania St., New Orleans, La., Mar. 22, flood plain section of Texarkana Dam, Bowie and Cass Counties, Inv. No. 16-047-50-210, from Wm. Crumpecker & Sons Co., and Gerald Smith Constr. Co., Morehouse, Mo., $1,856,103.

CONTRACTS AWARDED

▲† **Tennessee, Missouri and Arkansas**—U. S. Eng., P. O. Box 97, Memphis, Zone 2, Tenn., casting 120,000 squares articulated concrete mattresses at Cates Landing, Tenn. to Wright Contg. Co., 504 25 Ave., Columbus, Ga., $992,100***casting 32,000 squares at Caruthersville, Mo.; to Fordice Constr. Co., Porter Bldg., Memphis, $335,536***128,600 squares at Richardson Landing, Tenn., and 80,000 squares at Helena, Ark., to Weymouth Constr. Co., 2174 Person Ave., Memphis, Tenn., $1,648,486, all foregoing CIVENG-40-041-50-107. Grand total $3,176,-122. Bids 2/23. CD 3/7, under LB.

▲† **Tennessee**—U. S. Eng., U. S. Courthouse, P. O. Box 1070, Nashville. Zone 1, construct Cheatham Lock, Cumberland River, CIVENG-40-058-50-29, to T. L. James & Co., Inc., Ruston, La., and Stevens Bros. & Miller-Hutchinson Co., Inc., 730 Gravier St., New Orleans, La., $4,975,259. Bids 2/14. CD 2/26, under LB.

AIRPORTS

BIDS ASKED

Wis., Milwaukee—AIRPORT IMPRVS.—B. A. 4/18—Bd. Harbor Comrs., City Hall, airport imprvs., incl. A, imprv. access road grading, draining, paving, fencing and lighting Mustard's field, air strip, building, seaplane ramp. B, 1 story, 50×125 ft., steel, brick administration bldg. $140,000. Plans deposit $10. J. P. Schwada city engr. CD 8/2/48.

LOW BIDDERS

▲ **N. Y., Idlewild**—OPERATIONS BLDG.—Port of New York Auth., 111 8 Ave., New York, Zone 11, Contr. NYA 101, superstructure, operations bldg. at New York International Airport, from Corbetta Constr. Co., 230 E. 42 St., New York, Zone 17, $1,283,000. CD 3/22.

LATIN AMERICA

Venezuela, LaGuaira—Pub. Wks. Ministry, LaGuaira, awarded contract 3 story, passenger terminal to Frederick Snare Corp., 233 Broadway, New York, N. Y., U. S. A., 10,160,000 bolivar.

AMERICANS ABROAD

Iran, Shiraz—Govt. of Iran, will construct 200 ton capacity cement plant by local labor. $6,000,000. Kennedy-Van Saun Mfg. & Eng. Corp., 2 Park Ave., New York 16, N. Y., U. S. A., engrs.

PUBLIC BUILDINGS

BIDS ASKED

Conn., Clinton—SCHOOL—B.A. 4/17—Town School Bldg. Comrs., John B. Kindney, chn., brick, steel, concrete high school, Killingworth Rd., $400,000. Plans deposit $25. John E. Nichols, 30 Ten Acre Rd., West Hartford, archt. CD 6/21.

Conn., Vernon—GARAGE—B.A. 4/17—State, G. Albert Hill, hy. comr., State Office Bldg., Hartford, 2 story, brick, steel, concrete highway garage, Wilbur Cross Parkway. Plans deposit $15.

▲ **N. Y., Syracuse**—HOUSING—B.A. 4/17—Syracuse Housing Auth., 301 E. Washington St., Contr. 1, general contract, incl. street and yard imprvs.; Contr. 2, electrical work; Contr. 3, plumbing; Contr. 4, heating for Syracuse Housing, Proj. N. Y. S. 44, bounded by Oak St., Forbes Ave., Beacon Rd., Hazelhurst Ave., Nee St. and Taft Ave. $2,413,000. Extended date. Lesser & Curtain, S. A. & K. Bldg., archts. CD 3/2.

Ia., Eagle Grove—SCHOOLS—B.A. 4/18—Ed. Educ., rein.-con., brick, West Side Grade School, high school adns., incl. gymnasium, shop, boiler houses. Approx. $400,000. Smith & Voorhees, 206 Davidson Bldg., Des Moines, Zone 9, archts. CD 11/15.

N. Y., New York—HOUSING STREET YARD IMPRVS.—B.A. 4/18—New York City Housing Auth., 63 Park Row Zone 7, street and yard imprvs. for Lexington Houses (Proj. No. NYC 21) in area bounded by E. 98 St., 3 Ave., E. 99 St., Lexington and Park Aves. Plans deposit $25.

N. Y., Glendale—SCHOOL—B.A. 4/18—Supt. School Bldgs., Design & Constr., 44 Flatbush Ave. exten., Brooklyn, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures for P. S. 128 (Home School Unit), 60 Dr., Juniper Valley Rd., 69 Pl. and 70 St. Plans deposit $6 general contract, $3 others. CD 10/22/48.

N. Y., Whitestone—SCHOOL—B.A. 4/18—Supt. School Bldgs., Design & Constr., 44 Flatbush Ave. exten., Brooklyn, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures for P. S. 184, 21 Rd. between 163 and 166 Sts. Plans deposit $18 general, $7 each others.

W. Va., Parkersburg—SCHOOL—B.A. 4/18—Bd. Educ., Wood Co., 2 story, bsmt., brick, block Emerson Grade School. $265,000. CD 11/26.

Wis., Kenosha—SCHOOL—B.A. 4/18—Bd. Educ., 5515 Sheridan Rd., 2 story, bsmt., steel, brick, tile McKinley Jr. High School adn., $2,947,000. Childs & Smith, 20 N. Wacker Dr., Chicago, 11., archts. CD 4/5.

Ill., Grant Park—SCHOOL—B. A. 4/19—Grant Park School Dist., Grand Park, brick school, $250,000. Berger, Kelley & Samuelson, Lincoln Bldg., Champaign, archts.

Kan., Russell—SCHOOLS—B.A. 4/19—Bd. Educ., 2 schools, $625,000. E. M. Fuller, First National Bank Bldg., Kansas City, Mo., archts. CD 4/20.

▲ **Mich., Detroit**—SCIENCE-LIBRARY—B.A. 4/19—Wayne University, 4841 Cass Ave., stone, masonry, rein.-con., structural steel science-library bldg. $1,-000,000. Plans deposit $25. Pilafian & Montana, 159 E. Elizabeth St., archts. CD 12/7.

† **N. J., East Orange**—RESIDENCE, etc—B.A. 4/19—U. S. Eng., 80 Lafayette St., New York 13, N. Y., residence bldgs. and utilities at V. A. Hospital, Serial No. CIVENG-30-075-50-82.

Pa., Elizabethtown—HOSPITAL—B.A. 4/19—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating, plumbing, electrical work and elevators for alterations 12 wings to be added, main hospital bldg. at State Hospital for Crippled Children. $625,000. Plans deposit $10 each. Willing, Sons & Talbott, 1500 Walnut St., Phila., Zone 2, archts. A. F. Jones, c/o owner, ch. engr. CD 12/29.

Pa., Gettysburg—GARAGE, etc—B.A. 4/19—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating, plumbing, electrical work and elevators bldg. and connecting field for Pennsylvania State Police. $150,000. Plans deposit $2.50 each. Buchart Eng. Corp., 611 W. Market St., York, engr. and archt.

▲ **Pa., Hollidaysburg**—ADMISSION—B. A. 4/19—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating, plumbing, electrical work and elevator constr. for admission bldg. at Hollidaysburg State Hospital. $2,000,000. Plans deposit $20. Hunter, Caldwell & Campbell, P. O. Drawer, 912, Altoona, archts. A. F. Jones, c/o owner, ch. engr. CD 10/28.

† **Pa., Phila.**—BUILDING REPAIRS—B.A. 4/19—U. S. Dpt. Army, 2620 Grays Ferry Ave., Bldgs. 5 and 3, addns. and repairs, Schuylkill Arsenal. Approx. $15,000.

▲ **Ont., Ottawa**—OFFICE—B.A. 4/19—Acting Secy., Dpt. P. Wks., Hunter Bldg., D. V. A. Bldg., also known as East Bldg. of Office Bldg., Wellington St.

(Continued on page 104)

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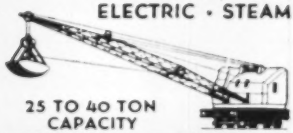
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(Continued from page 102)

between Kent and Lyon Sts. Approx. $6,000,000. Plans deposit $200. G. Brault, c/o owner, archt. Allward & Gouinlock, 57 Bloor St., Toronto, archts. CD 12/2/43.

† Calif., Oakland—QUARTERS—B.A. 4/20—U. S. Eng., 180 New Montgomery St., San Francisco, converting existing bldgs. to provide family type quarters at Oakland Army Base, Serial No. ENG-04-205-50-111.

Idaho, Nampa—HOUSING—B.A. 4/20—Nampa Housing Auth., City Hall, thirty-five 1 and 2 story frame incl. 75 housing unit bldgs., utilities, streets, sidewalks, lawns, community bldg., etc. $660,000. Plans deposit $25. Miller & Ahlson, 827 4 Ave., Seattle, Wash., archts. CD 12/28.

Ind., Indianapolis—EXHIBIT—B.A. 4/20—State Fair Bd., Carl Tyner, secy., State Fair Grounds, E. 38 St., 2 story, brick structural steel, rein.-con. conservation Exhibit bldg. $250,000. Plans deposit $25. Burns & James, 426 Architects & Builders Bldg., archts., Ammerman, Davis & Stout, 912 K. of P. Bldg., mech. engrs. CD 2/19/48.

Mass., Gardner—HOUSING—B. A. 4/20—City of Gardner Housing Auth., Nathan Parnes, chn., 40 unit frame housing, State Aided Proj., $425,000. Plans deposit $50, Samuel Glaser Assoc., 105 Newbury St., Boston, archts. CD 2/23.

† N. Y., Fort Wadsworth—RESIDENTIAL QUARTERS—B.A. 4/20—U. S. Eng., 80 Lafayette St., New York, Zone 13, residential quarters alterations. Plans deposit $10.

N. C., Concord—HOUSING—B.A. 4/20—Concord Housing Auth., Concord, 46 housing units. Extended date.

Tenn., Nashville—PHYSICAL EDUCATION—B.A. 4/20—State of Tennessee, Nashville, physical educ. bldg. at Agricultural & Industrial State College, $800,000. Extended date. McKissick & McKissick, Morris Bldg., archts. CD 10/27.

▲ Va., Richmond—HIGH SCHOOL—B.A. 4/20—Henrico County School Bd., Courthouse, Weedman Rd. High School. $1,100,000. Dixon & Norman, 1103 E. Main St., archts.

† Wash., Everett—WAREHOUSE—B.A. 4/20—Pub. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., 16x71 ft. storage warehouse at U. S. Naval Reserve Training Center.

Wash., Suitan — SCHOOL — B.A. 4/20 — Union High School Dist. 112, Suitan, remodeling, enlarging high school. $260,000. Plans deposit $45. Extended date. W. A. Johnson & Assoc., 1 Natl Bank Bldg., Everett, archts. CD 3/30.

▲ N. S., Halifax — HOUSING—B. A. 4/20—P. J. Mangan, engr., 1032 Gottingen St., Halifax, eighty-one bldgs., 1521 living units. $1,700,000. Plans deposit $50. CD 12/5.

▲ Mass., Taunton—HOSPITAL—B.A. 4/21—Commonwealth of Mass., Dpt. Mental Health, 15 Ashburton Pl., Boston, hospital addns., alterations, incl. Proposal A, infirmary, male dormitories, connecting tunnels; Proposal B, female dormitories, connecting tunnels; Proposal C, cafeteria; Proposal D, boiler plant and tunnel to infirmary; Proposal E, roads and paved area; Proposal F, services and utilities; Proposal G, all work above. $8,700,000. Leland & Larsen, 814 Statler Bldg., Boston, archts. R. D. Kimball Co., 86 Beacon St., Boston, engrs. CD 2/28.

N. Y., New York—GAS STATION—B.A. 4/21—Comrs. Parks, Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., Zone 21, general contract, electrical, plumbing, heating and ventilating of 2 gas stations on Hutchinson River Parkway, Bronx Boro. Plans deposit $5 each.

▲ O., Cincinnati — HIGH SCHOOL — B.A. 4/21 — Bd. Educ., 216 E. 9 St., 1 to 4 story, bsmnt., rein.-con. high school, stadium, athletic field. $5,000,000. Plans deposit $100 high school, $25 for athletic field and stadium. Hake & Hake, 2400 Gilbert Ave., engrs. and archts. Harvey Blake, 800 Broadway, structural engr. CD 11/12/48.

O., Mayfield Heights — SCHOOLS — B.A. 4/21 — Bd. Educ., YCM Center Rd., 2 story, bsmnt., brick, steel Oakville School addn., alterations and gymnasium bldg., Oakville and Mayfield Ridge Rds., Fulton, Krinsky & Delamotte, 6014 Euclid Ave., Cleveland, archts. Lew B. Munnina, 6014 Euclid Ave., Cleveland, engr. CD 11/22.

Tex., Lubbock—VETERINARY SCIENCE—B.A. 4/21—Texas Technological College, M. E. Pennington, 101 Administration bldg., veterinary science bldg., stock judging pavilion and assistants' quarters. $275,000. Plans deposit $25. W. R. Hedrick, P. O. Box 104, Texas Station, archt. CD 3/27.

† Colorado—CIRCUIT BREAKER, etc.—B.A. 4/24—Bureau Reclamation Dpt. Interior, Bldg. 1-A, Denver Federal Center, circuit breaker, air interrupter switch, disconnecting switches, lightning arresters, potential transformer for Kremmling tap for Green & Creek substations, Colorado Big Thompson Proj., Spec. R7-116 (Region 7). L. N. McClellan, ch. engr.

▲ Mich., Detroit—HOUSING—B.A. 4/24—Detroit Housing Comn., 409 Griswold St., 462 family dwelling units and maintenance bldg., boiler house, Jeffries Housing. $4,000,000. Plans deposit $155., Smith Hinchman Grylls, 800 Marquette Bldg., archts. CD 3/10/48.

▲ Mich., Wayne—SCHOOL—B.A. 4/24—Bd. Educ., Wayne Wayne Memorial High School, incl. Unit A, 3 story, 120x367 ft., Unit B, 1 story, 96x161 ft., Unit C, 2 story, 180x200 ft., Unit D, 12ex179 ft., and 50x60 ft. boiler house. $2,000,000. Plans deposit $50. Malcolmson, Fowler & Hammond, 1217 Griswold St., archts. F. O. Jordan, 506 Fox Bldg., engr. CD 8/6/47.

Ore., Corvallis—ANIMAL INDUSTRIES, etc.—B.A. 4/24—State Bd. Higher Educ., University of Oregon, Eugene, U-shaped, rein.-con., brick veneer animal industries bldg. at Oregon State College, $930,000. Glen Stanton, Concord Bldg., Portland, archt., 2 story, rein.-con. brick veneer food industries bldg., $660,000. Burns, Bear & McNeal, 2940 S.E. Belmont St., Portland, archts. CD 12/19.

Ont., Toronto—HEATING PLANT—B.A. 4/24—H. G. Acres, engr., 2135 Culp St., Niagara Falls, central heating plant, incl. two 75,000 lb. per hour steam generating units complete with coal pulverizing equip., etc., for University of Toronto, Toronto. CD 2/20/47.

† California — ADMINISTRATION, etc. — B.A. 4/25 — U. S. Eng., 1209 Eight St., Sacramento, administration bldg., garage utilities, Isabella Proj., Kern River, approx. 2 mi. southeast of Isabella, Kern Co., Serial No. CIVENG 04-167-50-67.

Calif., Arcadia—ARMORY—B. A. 4/25—State Div. Architecture, P. Wks. Bldg., Sacramento, 1 and 2 story, rein.-con. 17,000 sq. ft. Type E Armory for California National Guard. Plans deposit $25. Anson Boyd, Sacramento, state archt.

Ore., Ashland—LIBRARY, etc.—B. A. 4/25—State Bd. Higher Educ., University of Oregon, Eugene, 2 story, 80x203 ft. rein.-con. library-classroom bldg., for Southern Oregon College of Educ. $300,000. C. Howard Kable, Yeon Bldg., Portland, archt. CD 6/21/48.

Tex., Brownwood—GYMNASIUM, etc.—B.A. 4/25—City, A. N. Thomason, mayor, Brownwood, gymnasium bldg. and an addn. to South Ward School. $250,000. Plans deposit $10. Wilson & Patterson, 202 Majestic Bldg., Fort Worth, archts. CD 12/12.

Tex., Dallas—B.A. 4/25—Dallas Independent School Dist., Axard and Royal Sts., Gibraltan Knight School. $250,000. Mark Lemmon, 1210½ Main St., consult. archt. C. H. Griesenbeck, 309 Commerce Bldg., archt. CD 2/9.

† Wyoming—CONTROL BOARD, etc.—B.A. 4/25—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing 3el. 1 c.b. cars shipping point or f.o.b. cars Thermopolis, Wyo., control board, battery charger for Thermopolis substation, Transmission Div., Missouri River Basin Proj., Spec. 2343. L. N. McClellan, ch. engr.

Wash., Bellingham—MUSIC AUDITORIUM—B.A. 4/26—Western Washington College of Educ., Bellingham, completing music-auditorium bldg., $600,000. Jones & Bindon, Hoge Bldg., Seattle, Zone 4, archts. CD 12/31/48.

Calif., Salinas—SCHOOL—B.A. 4/27—Salinas Union High School Dist., 524 W. Alisal St., 1 story, frame, stucco El Sausal Junior High School. $75,000. Plans deposit $50. Charles E. Butner, 1112 Pajaro Park Way, archt. F. W. Kellberg, 320 Market St., San Francisco, engr. CD 11/25.

Idaho, Moscow—MUSIC BLDG.—B.A. 4/27—University of Idaho, Moscow, 3 story music bldg. Approx. $250,000.

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O., Fairborn—SCHOOL, etc.—Bids Asked—Bd. Educ., Emerson Palmer, clk., H. K. Baker, supt., Fairborn, school, stadium and field house on 25 acre tract along northeast corporation line of here. $890,000.

LOW BIDDERS

▲ Mich., Detroit—HOUSING—Detroit Housing Auth., 409 Griswold St., Mar. 20, 174 unit, masonry, concrete dwellings and boiler house addn., from Kunne-Simmons Co., 1300 Penobscot Bldg. $1,978,000. CD 2/16.

CONTRACTS AWARDED

▲ Pa., Phila.—TUBERCULAR—General State Auth., 18 and Herr Sts., Harrisburg, general contract tubercular patients bldg. at Philadelphia (Byberry) State Hospital, to Wark & Co., 1700 Samson St. $1,649,770. Awarded 3/22. Bids 3/15. CD 3/20, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

Ga., Atlanta—APARTMENTS—B.A. 4/18—Barbizon Tower Apartments, Inc., c/o John W. Cherry, archt., Candler Bldg., 60 apartment units.

▲ W. Va., Weirton—COMMUNITY CENTER—B.A. 4/18—Weirton Community Center Assoc., Weirton, community center. $1,000,000. John J. Reitz, 421 Market St., Steubenville, O., archt. CD 3/2.

La., New Orleans—Y.M.C.A. BLDG.—B.A. 4/19—Y.M.C.A., c/o Jones & Roessle, archts., Maison Blanche Bldg., 4 story, Y.M.C.A. bldg. addn., alterations. $500,000. Extended date. CD 3/8.

▲ Mass., Newton—CLASSROOM—B.A. 4/20—Boston College, 140 Commonwealth Ave., 4 story, bsmnt., classroom bldg., Boston College. $1,000,000. Maginnis & Walsh, 126 Newbury St., Boston, archts. CD 9/23.

Minn., East Grand Forks—CHURCH—B.A. 4/21—Sacred Heart Parish, Rev. A. J. Merth, superstructure church, school, auditorium, rectory. $700,000. U. E. Free, Aberdeen, S. D., archt. G. M. Orr Eng. Co., 1034 Marquette Ave., Minneapolis, engr. CD 3/24/49.

Wis., Wisconsin Rapids—CHURCH—B. A. 4/21—Sts. Peter and Paul Catholic Congregation, 1150 2 St. N., 1 story, bsmnt., 68x161 ft., steel, stone, brick, block church, concrete fdn. and floors. $300,000. A. F. Billmeyer & Son, 172 2 St. S., archts. CD 2/23.

Ill., River Forest—SUPER MARKET, etc.—Bids Asked—800 North Harlem Bldg., Corp., 800 N. Harlem St., 81x130 ft. super market and 203x175 ft. parking lot. $350,000. Sidney C. Fink & Harold S. Pike, Inc., 134 N. LaSalle St., Chicago, Zone 2, archts. Kroger Co., lessee.

O., Cincinnati—APARTMENT—Bids Asked—David Fabe, 602 2nd Natl. Bank Bldg., 4 story, 100x140 ft. brick, concrete apartment. George H. Godley, 918 E. Court St., archt. CD 1/31.

O., Cincinnati—STORE, etc.—Bids Asked—Fred Dickman, 3-5 Mad River Creek Rd., Zone 13, 2 story brick concrete block, store and office bldg.

Pa., Bristol—RESIDENCES—Bids Asked—Joseph T. Varello, archt., 1411 Walnut St., Phila., residential development, Radcliffe St., for Owner, c/o archt. $250,000.

Tex., Houston—OFFICE—Bids Asked—Citadel Life Insurance Co., 912 Hamilton St., Unit 1, 3 story (ultimately 6 story) bsmnt., office bldg. $300,000. Koetter & Tharp 537 Hoffman St., archts. CD 3/23.

SOON LETS CONTRACT

▲ O., Toledo—APARTMENTS—Kenwood Gardens, Inc., 750 Hoyt-Hadler Bldg., Cleveland, soon lets contract 72 apartments. $4,500,000. Weinberg & Teare, 1221 Schofield Bldg., Cleveland, archts. CD 3/31.

▲ Tex., Bergstrom Field (P. O. Austin)—HOUSING—Air Installation Office, Bergstrom Field, Austin, soon lets contract, construct, manage and finance 68 one-bedroom units, enlisted men; and 28 one-bedroom homes, officers, $421,056; 167 two-bedroom units, enlisted men; 61 two-bedroom, officers, $2,000,016; 205 three-bedroom units, enlisted men; 45 three-bedroom units, officers, $2,017,560; 6 units of 4-bedrooms each, officers, $105,261. CD 3/10, under CA, not awarded.

LOW BIDDERS

▲ N. M., Albuquerque—HOUSING—Dpt. Air Force, The Pentagon, Wash., D. C., construct, manage and finance, 380 housing units with 3 bedrooms and 380 housing units with 2-bedrooms, from Beck-Utan-Hopkins, Irwin-Keasler Bldg., Dallas, Tex., $4,000,000 and $3,400,000 respectively. CD 10/27.

CONTRACTS AWARDED

▲ Calif., Los Angeles—DWELLINGS—Encino Park No. 2, 548 N. Hollywood Way, Burbank, 433 frame, stucco dwellings, Chimeneas, Etiwanda, Tarzana, Sugarman, Palora and Rosita Sts.; Lindley Doman, Garden Grove and Dobkin Aves., to G. Pinto, 548 N. Hollywood Way, Burbank. Approx. $2,432,300. Paul Duncan, 4823 Laurel Canyon Blvd., Los Angeles, archt.

▲ Calif., Los Angeles—DWELLINGS—Southwest Properties, Inc., 590 S. San Vicente Blvd., 320 frame, stucco dwellings on Balboa, McLennan, Forbes, Hawthorn and Gerald Aves., owner builds, $2,437,800.

▲ Calif., Whittier—DWELLINGS—Thomas Co., Inc., 2486 Huntington Dr., San Marino, 134 frame, stucco dwellings, owner builds, $1,036,200. Wm. A. Bray, 5670 Wilshire Blvd., Los Angeles, archt.

▲ Fla., Jacksonville—HOTEL—S.W. Fine Jr. H.E. Emmerett Jr., Mgr., Hotel Jacksonville, Inc., c/o Jacksonville Realty Co., Inc

Del., Wilmington—MILK PLANT—Bids Asked—Owner, c/o Savery, Schetz & Gilmour, archts., 2500 Walnut St., Phila., Pa., milk plant. Approx. $100,000.

Ill., Chicago—PLANT—Bids Asked—EKCO Products Co., Armitage and Cicero Sts., Zone 39, steel, brick, stone plant addn. $100,000. Friedmand Alschuler & Sincere, 223 W. Jackson St., Zone 6, archts.

Ill., Chicago — WAREHOUSE — Bids Asked — Michigan Twenty First Street Building Corp., c/o Loewenberg & Loewenberg, archts., 111 W. Monroe St., Zone 3, 4 story, bsmt., concrete warehouse. $250,000.

Ill., Skokie—FACTORY—Bids Asked—Rock-Tred Corp., 7316 St. Louis Ave., 10,000 sq. ft. factory. $75,000. Henry & Karl Newhouse, 23 E. Jackson St., Chicago, Zone 4, archts.

▲ Ill., Waukegan—PLANT ALTERATION—Bids Asked—Public Service Co. of Northern Illinois, on Lake Michigan at Greenwood Ave., electric generating plant alterations. $3,000,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, Zone 3, engrs.

O., Willoughby — SALES and SERVICE — Bids Asked — Glasscock Chevrolet, Third St., sales and service bldg., Euclid Ave. near Wilson St. $100,000. Wm. Bingham, Waterloo Rd., Cleveland, archt.

Pa., Phila.—MILL—Bids Asked—Dearnley Bros., Baynton and Chelten Aves., mill addn. Approx. $68,000. Sauter & Castor, 1411 Walnut St., engrs. CD 10/22/49.

Pa., Phila.—TANK TRUCK LOADING BLDG.—Bids Asked—Esso Standard Oil Co. of Pennsylvania, 21 S. 12 St., tank truck loading bldg. Approx. $68,000.

SOON LETS CONTRACT

Miss., Tupelo—BAKERY—Hardin's Bakeries, c/o Morris L. McNair, archt., Rosenbaum Bldg., Meridian, soon lets contract 25,000 sq. ft. bakery. $250,000. Correction—status: CD 3/8; under CA.

Neb., Omaha—GARAGE—J. L. Brandeis & Sons, 16 and Douglas Sts., soon lets contract 5 story ramp style parking garage. $500,000. N. S. Wallace, Omaha Natl. Bank Bldg., archt. CD 2/27.

CONTRACTS AWARDED

▲ Mich., Dearborn—DYNAMOMETER—Ford Motor Co., 3000 Schaefer Rd., 2 and 3 story, bsmt., 427x366 ft., irregular shaped, rein.-con., structural steel, masonry dynamometer bldg., to Darin & Armstrong, Inc., 2041 Feikell Ave., Detroit. Est. Approx. $5,000,000. Bids 2/27, awarded 3/29. CD 2/16.

▲ Wis., Sheboygan—PLANT—Wisconsin Power & Light Co., 122 W. Washington St., Madison, 7 story, 70x120 ft., steel, brick-Edgewater Generating Plant addn., to Cunningham Bros., 359 E. Grand Ave., Beloit, $9,000,000. Bids 3/3. CD 2/23.

UNCLASSIFIED

BIDS ASKED

† Colo., Grand Junction—LANDSCAPING—B.A. 4/18—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash., 25, D.C., landscaping for Veterans Administration Hospital, Spec. 5064, Proj. No. 2451.

† Mass., Brockton—PARKING AREA—B.A. 4/18—Officer in Charge of Constr., First Naval Dist. Headquarters, 495 Summer St., Boston, constr. approx. 120 x 190 ft., bit. concrete surf. parking area, U. S. Naval Reserve Training Center. Spec. 23904. Plans deposit $10.

Mo., St. Louis—SWIMMING POOL—B.A. 4/18—City, c/o Frank J. McDevitt, prev. Bd. Pub. Service, 304 City Hall, 12 and Market Sts., Zone 3, 55x155 ft. swimming pool, 3½ to 10 ft. deep, Community Center addns., alterations, Vashon Playgrounds, Market St. and Compton Ave. $150,000. Plans deposit $15. Bridges & Bldg. Section, Dist. President Water & Grecelius, ch. engr., and Albert Ittner, archt., 301 City Hall, 12 and Market St., Zone 3, archt. and engr. CD 2/28.

N. Y., Flushing—TOLL BOOTHS—B.A. 4/18—Comr. Parks at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, Zone 21, toll booths and control house and rehabilitation parking field north of Roosevelt Ave. and west of 126 St., etc., in Flushing Meadows-Fork Contr. No. 2-49-150. Extended date CD 3/27.

Pennsylvania—UTILITY BLDGS. and TOLL PLAZAS—B.A. 4/18—Pennsylvania Turnpike Comm., 11 N. 4 St., Harrisburg, utility bldgs. and toll plazas, setting of toll booth and erection of canopies at Carlisle, Harrisburg, West Shore, Harrisburg East, Lebanon-Lancaster, Reading, Morgantown, Downingtown, Valley Forge and Pottstown interchanges of Pennsylvania Turnpike, heating, electrical and plumbing systems. Plans deposit $10 each. R. B. Stone, c/o owner, ch. engr.

Ala., Gadsden—ATHLETIC STADIUM—B.A. 4/14—City Bd. Educ., Gadsden, 5,500 seating capacity concrete athletic stadium. Plans deposit $25. D. O. Whilldin and Empire Bldg., Birmingham, archt.-engrs.

† Missouri—RURAL DISTRIBUTION LINES—B.A. 4/19—Southwestern Power Admin., P. O. Drawer 1614, Tulsa, Zone 1, Okla., 55 mi. 154 kv. rural distr. lines from Doniphan to Idalia. $175,000.

N. Y., New York—COMFORT STATION—B.A. 4/19—Comr. Parks, at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., Zone 21, general contract plumbing, electrical work and heating for comfort station in Battery Park, south of Battery Pl. and west of State St. Plans deposit $5 each. CD 3/7/45.

† Colorado—TRANSFORMERS—B.A. 4/20—Bureau Reclamation, Dpt. Interior, Bldg 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Brush, transformers for Beaver Creek substation Colorado-Big Thompson Proj., Spec. 2441. L. N. McClellan, ch. engr.

† Kentucky—ELECTRICAL EQUIPMENT—B.A. 4/20—U. S. Eng., 303 U. S. Courthouse, P. O. Box 1070, Nashville 1, Tenn., design, manufacture, del. f.o.b. railroad cars Somerset, accessory electrical equipment for Wolf Creek Hydro-Electric Power Plant, Cumberland River, Russell Co., CIVENG 40-058-50-37. Extended date. CD 3/2.

† Wyoming—TRANSMISSION LINE—B.A. 4/20—Bureau Reclamation, Dpt. Interior, Cody, construct Alcova-Boysen 115-kilovolt transmission line, Transmission Div., Missouri River Basin Proj., Fremont and Natrona Counties, Spec. 2915. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

† Arkansas and Missouri—CEMETERIES—B.A. 4/21—U. S. Eng., 300 Broadway, Little Rock, Ark., relocation of Wilkinson, Panther, Dial Bend, Trimble Fately, Hawkins, Pritchard and Long Cemeteries, White River Watershed, Bull Shoals Reservoir Area, White River, Marion Co., Ark. and Ozark Co., Mo., Serial No. CIVENG—03-050-50-32.

N. Y., Greenport—BATHHOUSE—B.A. 4/21—Long Island State Park Comn., Babylon, 40x96 ft. bathhouse at Orient Beach State Park, near here.

O., Cleveland—COAL HANDLING EQUIP.—B.A. 4/21—City, City Hall, coal handling equip. and coal storage site for municipal light plant. $97,000. Plans deposit $15.

† Oregon—ELECTRICAL DISTRIBUTION SYSTEM, etc.—B.A. 4/21—U. S. Eng., Pittock Block, Portland, electrical distr. sys. and fire alarm sys. in government housing area of Lookout Point Reservoir, near Lowell, Lane Co., CIVENG 35-026-50-303.

Fla., Ocala—SWIMMING POOL, etc.—B.A. 4/24—Marion County War Memorial Assn., c/o Moorhead Eng. Co., engr., 115 S. Main St., Ocala, swimming pool and bath house. Plans deposit $25.

Sask., Regina—WIRE STRINGING, etc.—B.A. 4/24—S. R. Muirhead, 2350 Albert St., Regina, wire stringing, pole replacements on 15 projects, for Province of Saskatchewan, Regina. Approx. $100,000. Plans deposit $10. CD 12/14/3.

† Arizona and Nevada—SWITCHBOARD, etc.—B.A. 4/25—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., control switchboard, motor-generator sets, switchboard cubicle, cabinets for Coolidge and Mesa substation, Davis Dam Proj., Spec. 2942. L. N. McClellan, ch. engr.

† Arizona—DISTRIBUTING BOARDS, etc.—B.A. 4/25—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.t. cars shipping point or f.o.b. cars Yuma, Ariz., power distribution boards, motor panel board, battery charger, etc. for Pumping Plants 1, 2 and 3, Gila Proj., Spec. 2944. L. N. McClellan, ch. engr.

† California—TRANSMISSION LINE—B.A. 4/25—Bureau Reclamation, Dpt. Interior, Fuerta, 230-kilovolt transmission line, Shasta Trucy Wis. 1 and 2, Artois-Madison and Cottonwood-Artois between Cottonwood and Madison Central Valley Proj., Spec. 2947.

† Calif., San Fernando—PARKING AREAS—B.A. 4/25—Veterans Admin., Maritime Bldg., Wash. 25, D. C., bit. parking areas for Veterans Administration Hospital, Spec. 5044, Proj. 2934.

† S. D., Sioux Falls—LANDSCAPING—B.A. 4/25—Veterans Admin., Maritime Bldg., Wash. 25, D. C., landscaping around Bldgs. 15, 16 and 17 for Veterans Administration Center.

▲ Wash., Seattle—UTILITY TUNNEL—B.A. 4/25—University of Washington, Seattle, Zone 5, 4,726 ft. west section of utility tunnel, $1,000,000. Plans deposit $20. Lincoln, Bouillon & Assocs., 1411 4 Ave. Bldg., Seattle, Zone 1, engrs.

† N. M., Los Alamos—PROTECTIVE FENCING GROUPS—B.A. 4/25—Atomic Energy Comn., Los Alamos, protective fencing groups, Inv. No. 291-50-85. Approx. $50,000. Plans deposit $25.

California—TRAFFIC SIGNAL SYSTEM, etc.—B.A. 4/27—State Div. Hys., 120 S. Spring St., Los Angeles, traffic signal sys. and lighting on Manchester Ave. between Artesia and Euclid Aves., Orange Co., G. T. McCoy, Sacramento, state hy. engr.

† Oregon—SALMON HATCHERY—B.A. 4/27—U. S. Eng., Pittock Block, Portland, salmon hatchery, incl. excavating, grading, rearing ponds, roads, works, water and sewerage sys., incinerator and sprinkler sys. at Oakridge Salmon Hatchery, CIVENG 35-026-50-300.

CONTRACTS AWARDED

▲† Oregon—RAILROAD RELOCATION—U. S. Eng., Pittock Block, Portland, relocation 4.5 mi. Southern Pacific R.R. line, 3 mi. in Lane Co. and 1.5 mi. in Linn Co., in connection with construction of Lookout Point Dam, Meridian location, Lane Co., CIVENG 35-026-50-242, to Guy F. Atkinson Co., Cascade Bldg., Portland. $2,846,611. Est. $3,184,500. Bids 3/15, awarded 3/30. CD 3/17, under LB.

▲ Texas-Louisiana—GAS LINES—Transcontinental Gas Pipe Line Corp., Oil and Gas Bldg., Houston, Tex., 90 mi. 4- to 14-in. gas gathering lines, in areas south of Eunice, La., to Latex Constr. Co., 2707 Ferndale St., Houston, Tex. Approx. $1,650,000; 50 mi. 18 and 20 in. gas gathering lines south of Eunice, La., from owners 30 in. main line Eunice, La., area, to F. B. Burden Constr. Co., Eunice, La. Approx. $1,850,000. CD 3/17.

Proposal Advertisements see pp. 106 to 111

OFFICIAL PROPOSALS

Bids: May 1, 1950 (685)

Garage and Field Office Chenango Bridge, New York

Broome County Highway Department

Notice to Bidders

Separate sealed proposals covering Construction, Heating, Plumbing and Electric Work for the Broome County Highway Department Garage and Field Office, Chenango Bridge, New York, in accordance with specifications and accompanying drawings, will be received by Howard Davis, Clerk of the Board of Supervisors, County Office Building, Binghamton, New York, on behalf of the Broome County Highway Department until 11:00 o'clock A. M. Eastern Day Light Saving Time on Monday, May 1, 1950 when they will be publicly opened and read.

Each proposal must be made upon the form provided therefor and shall be accompanied by a certified check made payable to the Treasurer of Broome County, of 5% of the amount of the bid as a guarantee that the bidder will enter into the contract if it be awarded to him. The name of the contract, such as Construction, Heating, Plumbing or Electric, and the name of the project must be written on the front of the envelope containing the proposal. The blank spaces in the proposal must be filled in, and no change shall be made in the phraseology of the proposal. Proposals that carry any omissions, erasures, alterations or additions may be rejected as informal. Successful bidders will be required to give a bond conditioned for the faithful performance of the contract in the sum of 100% of the amount of the contract, and a separate bond for the payment of laborers and materialmen in the sum of 100% of the amount of the contract. Corporations submitting proposals shall be authorized to do business in the State of New York. Drawings and specifications may be examined free of charge at the office of the County Superintendent of Highways, County Office Building, Binghamton, New York.

Drawings and specifications may be obtained at the County Superintendent's Office by making a deposit for each set as follows: Construction, $5.00; Plumbing, $2.00; Heating, $2.00; Electric, $2.00.

Charles F. West
Assistant Engineer

Bids: April 1, 1950 (656)

New Mound Park Hospital

St. Petersburg, Florida

Sealed proposals will be received by the City of St. Petersburg, Florida, at the office of the City Manager, in the City Hall, St. Petersburg, Florida, until 11:00 o'clock A.M. (EST), Monday, May 15, 1950, for the furnishing of all labor, equipment and materials for the construction of the New Mound Park Hospital at which time they will be publicly opened and read aloud. Plans, specifications and contract documents are open to public inspection at the office of the City Engineer, Room 211, City Hall on and after April 1, 1950, or may be obtained from that office upon deposit of Fifty ($50.00) Dollars. The full amount of the deposit for one set of documents will be returned to each actual bidder and all other depositors will be refunded Twenty-five ($25.00) Dollars upon return of all documents in good condition within thirty (30) days after the date of opening of the bids. All proposals shall be on standard forms furnished by the City Manager and shall be sealed and marked "PROPOSAL FOR CONSTRUCTION OF THE NEW MOUND PARK HOSPITAL."

Bids must be accompanied by a certified check or bid bond in the amount of not less than five (5%) percent of the bid. No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of thirty (30) days. The City of St. Petersburg reserves the right to reject any or all bids and to waive informalities and irregularities.

CITY OF ST. PETERSBURG, FLORIDA
Ross E. Windom
City Manager

(Continued on page 107)

"Opportunity" Advertising:
Think
"SEARCHLIGHT"
First

OFFICIAL PROPOSALS
(Continued from page 106)

Bids: April 26, 1950 (677)

Construction of Substructure

PENNSYLVANIA TURNPIKE COMMISSION
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 A.M. (Eastern Standard Time), the 26th day of April, 1950, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud, for the following contract:

For the construction of the substructure Turnpike Section 301E, Willow Run Viaduct, part of the Western Pennsylvania Turnpike Extension in Hampton Township, Allegheny County, Commonwealth of Pennsylvania. This section being situated as follows:

Beginning at a point approximately 100 feet West of the Centerline of Willow Run in Hampton Township, at Turnpike Station 491+63.71, Allegheny County, thence in an Easterly direction 804.34 feet to a point approximately 160 feet East of the Centerline of Township Road 584 in Hampton Township at Turnpike Station 497+68.05, Allegheny County, a distance of approximately 0.15 miles.

The approximate quantities of the principal items follow:

Class B Excavation, 2,100 cu. yd.; Concrete Pier Bases and Abutment Footers, 1,900 cu. yd.; Concrete Pier Shafts and Abutments Above Footers, 1,300 cu. yd.; Steel Reinforcing Bars, 225,500 lbs.; Structural Carbon Steel, 4,000 lb.

Copies of plans, specifications, and other contract documents are on file and open to public inspection in the offices of the Pennsylvania Turnpike Commission, located at Harrisburg, Pennsylvania, on 11 April 1950. Plans, specifications and other contract documents will not be available before this date for inspection or for mailing to prospective bidders. Copies of specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

Plans and contract documents, exclusive of specifications may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five days after the date of the opening of the bids. Refund will be made for all plans and contract documents if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
March 21, 1950

Bids: May 4, 1950 (686)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACT NO. 28

The work to be done under this Contract involves the construction of a bridge across Rancocas Creek and work incidental thereto in connection with the construction of Section 3 of the New Jersey Turnpike, Burlington County.

Principal items of work for Contract No. 28 include:

Open Foundation Excavation 4,800 Cu. Yds.
Untreated Timber Piles 13,000 Lin. Ft.
Treated Timber Piles 2,400 Lin. Ft.
Cast-in-Place Concrete Piles 2,000 Lin. Ft.
Precast Concrete Piles 6,150 Lin. Ft.
Concrete, Various Items 9,500 Cu. Yds.
Reinforcement Steel 550,000 Lbs.
Structural Steel 2,830,000 Lbs.

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, until 10:30 o'clock on the morning of May 4, 1950 and thereafter in the Veteran's Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey until 11:00 A.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a recent financial statement and a statement of plant and equipment. Contract documents may be seen and may be inspected by prospective bidders during office hours, after April 7, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey, and at the office of the Engineers, Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York 6, New York.

Contract Documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and Contract Documents are not required to be returned.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for construction of the New Jersey Turnpike, and must be enclosed in a special addressed envelope bearing the name and address of the bidder and the number of the Contract on the outside, and must be accompanied by a *certified check* drawn to the order of the New Jersey Turnpike Authority *and a proposal bond, each for not less than* five (5) *percent of the amount of the proposal*, but not less than $500.00 nor more than $200,000.00. Bid must be delivered at the above place on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for proposal bond, of the form to be used for financial statement and plant and equipment statement to be submitted with proposal, and special addressed envelopes are furnished detached form with the Contract Documents.

The Contracts will be awarded or proposals rejected within fifteen (15) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

April 6, 1950

Bids: April 20, 1950 (687)

Postponement of Bids Atlantic Beach Bridge

Sealed bids will be received by the Nassau County Bridge Authority in the chambers of the Board of Supervisors, First Floor, Old County Court House, Franklin Avenue, Mineola, Nassau County, New York, until 10:30 A.M. on April 20th, 1950, when they will be publicly opened and read aloud, and the Contract awarded as soon as practicable thereafter, for the construction of the Atlantic Beach Bridge over Reynolds Channel between Lawrence and Atlantic Beach, Nassau County, New York.

The work will be performed under a single, unit price contract except for certain minor features which will be let under separate contract. Attention of bidders is particularly called to the requirements of the Labor Law as to conditions of employment to be observed and the minimum wage rates to be paid under the contract, and to the fact that a performance bond will be required.

After the opening of bids and when directed by the Chairman of the Authority, the bidder must submit a sworn statement setting forth such information as the Chairman may require concerning his financial condition, present and proposed plant and equipment, the personnel and qualifications of his working organization, prior experience and performance record.

Proposal for Bids and Agreement, Contractor's Bond, Specifications and the Plans may be examined at the offices of Hardesty & Hanover, Consulting Engineers, 101 Park Avenue, New York, New York, not later than April 17th, 1950, 5:00 P. M., preceding the day for receiving bids, and copies of the same may be obtained there.

A deposit of Fifty ($50.00) Dollars will be required for each copy of the Plans and Contract Documents. Any bidder upon returning to the office of Hardesty & Hanover, Consulting Engineers, 101 Park Avenue, New York, N. Y., such set of Contract Documents and Plans in good condition within thirty (30) days after the awarding of the contracts covered thereby, or the rejection of the bid of such bidder, will be refunded his deposit and any non-bidder upon so returning such set will be refunded Forty ($40.00) Dollars of his deposit.

Each proposal must be accompanied by a security deposit in the amount as fixed in Article 20 of the Agreement, by money or a certified on a solvent bank or trust company, made payable to the Nassau County Bridge Authority or the bidder as assurance that the bid is made in good faith (e.g., Nassau County Bridge Authority or John Smith, Inc.), or in lieu of such security deposit the bidder may furnish with his bid a bond in the amount of such security deposit (the form of which bid bond may be obtained at the offices of Hardesty & Hanover, Consulting Engineers), duly executed by the bidder as principal and having as surety thereon a surety company approved by the Nassau County Bridge Authority.

The Nassau County Bridge Authority reserves the right to waive any informalities in or to reject any or all bids, and to accept the bid which it deems most favorable to the interest of the Authority after all bids have been examined and canvassed.

NASSAU COUNTY BRIDGE AUTHORITY
By WILLIAM F. PLOCH
Secretary

Dated: At Mineola, L. I., N. Y.
April 5th, 1950

TAKE NOTICE that the time for the receipt and opening of proposals for the work to be performed under the contract mentioned in the above notice has been extended and all proposals will be received at the place stated in said notice until 10 A.M. on April 20th, 1950 when they will be publicly opened and read aloud, and the contracts awarded as soon as practicable thereafter.

NASSAU COUNTY BRIDGE AUTHORITY
By WILLIAM F. PLOCH
Secretary

Dated: At Mineola, L. I., N. Y.
April 5th, 1950

Bids: May 9, 1950 (679)

Concrete Repairs—General MacArthur Bridge

DEPARTMENT OF PUBLIC WORKS
CITY OF DETROIT, MICHIGAN
CONTRACT PW-1184

Sealed proposals for concrete repairs to General MacArthur Bridge, located at the foot of East Grand Boulevard, over the Detroit River, addressed to the department of public works of the city of Detroit, and endorsed "proposal for contract PW-1184" will be received at the office of the Department of Public Works, 164 City Hall, until 2:00 P.M. City of Detroit time, on May 9, 1950. At which time they will be publicly opened and read aloud. Any proposal received after the above mentioned time will be returned, to the bidder unopened.

The work included consists of the removal of all loose concrete, the cleaning of exposed structural and reinforcing steel, and the restoration of the defective surfaces to their original position. The scope of this work includes the arch ribs, bearing struts, and floor slabs below the top deck level of the bridge.

The contract documents, including notice to bidders, form of proposal and agreement, drawing and specifications may be examined and obtained at the office of the city engineer, 10th floor Griswold Building, Detroit 26, Michigan, during business hours.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than 5 percent of total bid price as security for the acceptance of the contract.

After the scheduled closing time for receipt of bids, no proposal may be withdrawn for at least 45 days.

The city of Detroit reserves the right to waive any informality in any bid or to accept any bid, or to reject any or all bids, should it be deemed for its best interests so to do.

CITY OF DETROIT
CARL D. WARNER
Commissioner of Public Works

(Continued on page 108)

U. S. Government
(Continued from page 107)

Notice to Contractors

GENERAL SERVICES
ADMINISTRATION
Community Facilities Service
Washington 25, D. C.

Sealed proposals will be received by Rufe B. Newman, Jr., Deputy Commissioner for Engineering and Construction, Community Facilities Service, General Services Administration, Room 5143, General Services Building, Washington, D. C., until 11:00 o'clock A.M., Eastern Standard Time, on May 17, 1950, for the construction of the following work at Charlotte Amalie, St. Thomas, Virgin Islands, comprising approximately the following quantities in the major items:

PROJECT NO. 53-106—WATERFRONT IMPROVEMENTS
ST. THOMAS, VIRGIN ISLANDS

3,600 cu. yds., Rock Fill
1,500 sq. yds., Grouted Riprap
37,000 lin. ft., Wood Piles
141,000 sq. ft., Steel Sheet Piling
134,000 lbs., Tie Rods
327,000 lbs., Steel Reinforcement
4,600 lin. ft., Creosoted Timber Guard Rail (8" x 10")
2,200 cu. yds., "A" Concrete
330,000 cu. yds., Earth Fill
5,500 lin. ft., Pipe in Storm Sewers (15" to 30")
1,200 cu. yds. Rubble Masonry
20 Manholes, Inlets and Catch Basins
2,700 lin. ft. Combined Curb and Gutter
2,500 sq. yds. 6" Concrete Pavement

At which time and place the proposals will be publicly opened and read aloud. Bids received after closing time of bid opening will be returned unopened.

Plans and specifications and other proposed contract documents are open for public inspection at the District Engineer's office, Charlotte Amalie, St. Thomas, Virgin Islands; the District Engineer's Office, 501 Banco Popular Building, San Juan, Puerto Rico; and Room 5130, General Services Building, Washington, D. C.

A set of such documents may be procured from the office of R. L. Kenan & Associates, Consulting Engineers, Bell Building, Montgomery, Alabama, upon deposit of $50.00, all of which will be refunded to bona fide bidders upon the return of plans and specifications, in good condition, within seven days from date of bid opening.

To parties who procure plans and specifications upon payment of $50.00 and who do not submit a bid, $40.00 will be refunded *provided same are returned within seven days from date of bid opening. No refund will be made for return after this time.*

Each proposal must be accompanied by a bid security in an amount of not less than 5 per cent of the total bid.

The successful bidder will be required to furnish a performance bond in an amount equal to 100 per cent of the contract price, and a payment bond in an amount equal to 100 per cent of the contract price, such bonds to cover full performance of the contract and payment of labor and materials.

No proposal may be withdrawn after the scheduled closing time for receipt of bids for at least 30 days.

The Government reserves the right to reject any and all proposals and to waive informalities with respect thereto.

PERE F. SEWARD
Commissioner
(681)

Notice to Contractors

GENERAL SERVICES
ADMINISTRATION
Community Facilities Service
Washington 25, D. C.

Sealed proposals will be received by Rufe B. Newman, Jr., Director, Public Works Construction Division, Community Facilities Service, General Services Administration, Room 5143, General Services Building, Washington, D. C., until 11:00 o'clock A.M., Eastern Standard Time, on May 24, 1950, for the construction of telephone and radio link facilities and buildings on the islands of St. Thomas and St. Croix (U. S. Virgin Islands) as follows:

PROJECT No. 53-501, ST. THOMAS TELEPHONE SYSTEM
(Project No. 13, Public Law 510, 78th Congress)

Subproject 13A — Outside Telephone Plant, St. Thomas.

Subproject 13B—Inside Telephone Plant, Charlotte Amalie.

Subproject 13C—Subscriber Telephone Plant, St. Thomas.

Subproject 13R—Radio Link Stations, Virgin Islands.

U. S. Government

Subproject 13X—Telephone Exchange, Charlotte Amalie.

PROJECT No. 53-509, ST. CROIX TELEPHONE SYSTEM
(Project No. 26, Public Law 510, 78th Congress)

Subproject 26A — Outside Telephone Plant, St. Croix.

Subproject 26B—Inside Telephone Plant, Christiansted and Frederiksted.

Subproject 26C—Subscriber Telephone Plant, St. Croix.

Subproject 26X—Telephone Exchanges, Christiansted and Frederiksted.

At which time and place the proposals will be publicly opened and read aloud. Bids received after closing time of bid opening will be returned unopened.

Plans and specifications and other proposed contract documents are open for public inspection at the District Engineer's Office, Charlotte Amalie, St. Thomas, U. S. Virgin Islands; the District Engineer's Office, 501 Banco Popular Building, San Juan, Puerto Rico and Room 5130, General Services Building, Washington, D. C. A set of such documents may be procured from any of the above-listed offices upon deposit of $50.00, all of which will be returned to bona fide bidders upon the return of plans and specifications, in good condition, within seven days of date of bid opening.

Each proposal must be accompanied by a bid security in an amount not less than 5 percent of the total bid.

Bids will be accepted on any single subproject or project.

The successful bidder(s) will be required to furnish performance bond(s) in an amount equal to 100 percent of his (their) bid(s) and payment bond(s) in an amount equal to 100 percent of his (their) bid(s), such bonds to cover full performance of the contract(s) and payment(s) for labor and materials.

No proposal may be withdrawn after the scheduled closing time for receipt of bids for at least 30 days.

The Government reserves the right to reject any and all proposals and to waive informalities with respect thereto.

PERE F. SEWARD
Commissioner
(682)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 29691) will be received by Bureau of Reclamation, Bismarck, North Dakota, until 2 p.m., May 2, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Leeds-Rolla 69-kv. transmission line, Missouri River Basin Project, North Dakota. The work is situated between Leeds, Bisbee, and Rolla, North Dakota. The transmission line will be 115-kv., 3-phase, single circuit, wood-pole, H-frame type approximately 40 mi. long, with overhead ground wires strung for only 2 mi. of line. Time allowed for completion will be 200 days. For particulars, address Bureau of Reclamation, Bismarck, North Dakota; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(680)

OFFICIAL PROPOSALS

Bids: April 27, 1950 (683)

Planting on Parkway

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for . . .

PALISADES INTERSTATE PARKWAY SEC. 2C (PLANTING)

Planting on Palisades Interstate Parkway, New Jersey Section 2C, from Palisades Avenue northerly 1.2 miles in the Borough of Englewood Cliffs, Bergen County.

Estimated:
20 Trees—Deciduous
386 Trees—Small & Flowering
150 Trees—Evergreen
3,882 Shrubs
5,052 Vines & Ground Cover
824 Trimming Existing Trees

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, New Jersey, on Thursday, April 27, 1950, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

OFFICIAL PROPOSALS

Bids: April 27, 1950 (684)

Construction of Road

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for . . .

ROUTE 56, SECTION 3

Construction of Route 56, Section 3, Pavement Resurfacing, from Shore Road, City of Absecon, to Beach Thorofare, City of Atlantic City, Atlantic County.

Estimated:
2,300 cu. yds. Roadway Excavation-Earth
6,800 cu. yds. Borrow Excavation
27,700 sq. yds. 3" Mod. Pen. Mac. Inter. Course
25,800 tons Pavement, Type MA-BC
27,300 lin. ft. of Concrete Center Island

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, New Jersey on Thursday, April 27, 1950, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

(Continued on page 109)

U. S. Government
(Continued from page 108)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Alternate Specifications Nos. 2557 and 2558) will be received by Bureau of Reclamation, Goleta, California, April 27, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of pipe lines and structures for the South Coast conduit and Glen Anne wasteway, Santa Barbara Project, California. The work is situated in the vicinity of Santa Barbara, California. Principal items are approximately 220,000 cu. yds. of trench excavation; manufacturing and laying 9.7 mi. of 48-inch pipe line, alternate concrete (Specifications No. 2557) or steel pipe (Specifications No. 2558); 8.2 mi. of 36-inch concrete pipe; 1,200 cu. yds. concrete in structures; furnishing and installing gate valves, air valves, and line meters; and other work. Time allowed for completion will be 600 days. For particulars, address Bureau of Reclamation, Goleta, California, or Building 7-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(6871)

OFFICIAL PROPOSALS

Bids: May 1, 1950 (675)

Approach to Bridge

DELAWARE RIVER JOINT TOLL BRIDGE COMMISSION
526 Broad Street, Bank Building
Trenton 8, New Jersey

NOTICE TO CONTRACTORS

Sealed Proposal for the Construction of the Easton Approach to the Raubkill Street Bridge between Easton, Pennsylvania and Phillipsburg, New Jersey, will be received by the Delaware River Joint Toll Bridge Commission at its office, 526 Broad St. Bank Building, Trenton 8, New Jersey, until eleven o'clock (11:00) A.M., Eastern Standard Time, on the 1st day of May 1950, at which time and place all bids will be publicly opened and read aloud.

After Wednesday April 5, 1950 instructions to bidders, form of proposal, form of contract, forms of performance bond, plans, and specifications may be examined at the office of the Commission, above address, or Phillipsburg, New Jersey, or at the office of the J. E. Greiner Company, 1201 St. Paul Street, Baltimore 2, Maryland, and copies thereof obtained upon payment of $10.00 for each set, which amount is not returnable.

Each bid must be accompanied by a certified check in the amount of sixty-five thousand dollars ($65,000), made payable to the Delaware River Joint Toll Bridge Commission, which amount shall be forfeited as liquidated damages if the Bidder fails, within ten (10) consecutive calendar days after written notice that the bidder has been awarded the contract to enter into a written contract with the commission in accordance with the accepted bid, and to give a performance bond satisfactory to the commission, equal to one hundred percent (100%) of total amount of the contract.

The commission reserves the right to waive any informalities in the bids received, to reject any or all bids, and to award the contract only to those experienced in this class of work, and to the bidder whose proposal is deemed by the commission to be most advantageous to public interest.

Delaware River Joint Toll Bridge Commission by: Alexander R. Miller, Chairman of Commission.

Date April 1, 1950

Bids: May 9, 1950 (674)

Intake Structure and Raising Earth Dam

CITY OF NORWALK, CONNECTICUT
SECOND TAXING DISTRICT

Sealed bids will be received in accordance with the law by the District Commissioners of the Second Taxing District of the City of Norwalk, Connecticut until 2:00 o'clock, P.M. Daylight Saving Time on the Ninth day of May, 1950, at the office of the District Commissioners of the Second Taxing District, City Hall, Norwalk, Connecticut, for furnishing, entering into and performing the labor for Improvements to City Lake Reservoir, all in accordance with plans and specifications prepared by Buck, Seifert and Jost, Consulting Engineers, 112 E. 19th Street, New York 3, New York.

Copies of the plans and specifications may be obtained either from the office of the District Commissioners or from the Consulting Engineers upon deposit of Twenty-Five ($25.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within ten (10) days after the date on which bids are received or else the entire deposit will be forfeited.

The work to be performed is divided into two (2) sections, under which the work is classified according to its character.

Bidders will be allowed to bid on one (1) or both sections and will be allowed to enter a combined bid on both sections.

The work to be done includes all materials and labor, tools, plant and equipment necessary for constructing, installing and completing, ready for operation, the following elements.

SECTION A: DAM AND DIKES, including raising the existing earth dam seven (7) feet, raising the existing earth west saddle dike nine (9) feet and raising the existing earth Wilton Road dike five (5) feet, including slope riprap protection and toe fills of rock, construction of a concrete spillway channel and concrete outwall, alterations to existing piping and structures.

SECTION B: INTAKE SCREEN CHAMBER AND BRIDGE, including construction of a reinforced concrete intake chamber in City Lake Reservoir and connection of the chamber to the existing piping.

Each proposal must be accompanied by a certified check payable to the Second Taxing District, Norwalk, Connecticut or bid bond from a reliable surety company authorized to do business in the State of Connecticut and satisfactory to the Commissioners, in amount equal to fifteen (15%) per cent of the proposal. The certified checks will be retained to pay for any damage or loss to the Commissioners, of the liability bond will not leave the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Commissioners reserve the right to consider bids for fifteen (15) days after their receipt before awarding any contract and the right is reserved to accept any bid or to reject any or all of them.

DISTRICT COMMISSIONERS,
SECOND TAXING DISTRICT
CITY OF NORWALK,
CONNECTICUT
By WILLIAM HARFORD,
Commissioner
IRVING C. JENNINGS,
JAMES DONNELLY,
ELMER BRACKEN, General Manager
BUCK, SEIFERT and JOST
Consulting Engineers

Bids: April 25, 1950 (671)

Refuse Incinerator Plant

NOTICE TO BIDDERS

REFUSE INCINERATOR PLANT FOR THE SANITARY AREA OF THE TOWN OF CORTLANDT, WESTCHESTER COUNTY, N. Y.

SEALED BIDS will be received by the Town Board of the Town of Cortlandt, at the office of the Town Clerk in the Municipal Building, Croton-on-Hudson, N. Y. until 8:00 P.M. Daylight Saving Time on Tuesday April 25th, 1950, for Designs, construction and installations necessary to establish at the Town Incinerator site, complete with all equipment and appurtenances and ready for use, an incinerator plant building, complete together with main breeching housing and chimney, rough grading and all excavation and backfill, sewage and drainage lines and accessories and all plumbing and necessary electrical work, and also including installation complete in the plant building of one incinerator unit having a capacity of 36 tons per 24 hours and consisting of one furnace with dumping grates, ash hoppers, ash gates and ash car and track, and other work incidental thereto.

Pamphlets containing information for bidders, forms of bid and general specifications may be obtained at the office of the Town Engineer, 306 South Street, Peekskill, N. Y. on and after Wednesday, April 6th, 1950.

Each bidder must deposit with his bid a certified check in the amount of $1000.00, subject to the conditions provided in the information for bidders.

The maximum amount to be spent upon this project shall not exceed the sum of Sixty-five thousand dollars. ($65,000.00) and no bid will be considered in excess of said sum.

The Town Board reserves the right to reject any or all bids, or to accept that bid, acceptance of which will, in the judgment of the Town Board of the Said Town, best secure the public interest and efficient work.

No bidder may withdraw his bid within forty-five (45) days after the opening thereof.

JAMES H. FERRIS,
TOWN CLERK, TOWN OF CORTLANDT

Dated, March 29th, 1950

Bids: April 18, 1950 (654)

Port Jervis Sewerage System

CONTRACTS 380 and 381

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York, City, until 11:00 A. M., Eastern Standard Time, on Tuesday, April 18, 1950, for Contracts 380 and 381, for the construction of the intercepting sewers, force mains, pumping stations and sewage treatment plant of the Port Jervis sewerage system, in the City of Port Jervis, Orange county, New York, all as set forth in the specifications. CONTRACT 380 will consist of about 5.25 feet of 10-inch, 12-inch and 15-inch vitrified pipe and about 2,980 feet of 36-inch cast iron pipe for the intercepting sewers, about 1,350 feet of 16-inch and about 915 feet of 8-inch cast iron force mains, two river crossings totaling about 370 feet in length, and appurtenances. CONTRACT 381 will consist of the North Street and Seventeenth pumping stations and a sewage treatment plant comprising a pumping station for industrial wastes, main building, Imhoff tanks, high-rate trickling filters, recirculating pump structure, secondary settling tanks, glass-enclosed sludge drying beds, chlorine equipment, 6-inch Parshall Venturi meter, fine screens, pumps, piping and other equipment and appurtenances.

Sets of information for bidders, forms of bid and contract, specifications, contract drawings and geologic reports in regard to each contract can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of $25.00 in cash or its equivalent for each set. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each set submitted as a bid and a refund of $4.00 will be made for each set returned in acceptable condition. Arrangements will be made with any prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, HENRY HESTERBERG, RUFUS E. McCAHEN, Commissioners, Board of Water Supply. RICHARD H. BURKE, Secretary.

Bids: April 20, 1950 (664)

Storm Drainage Work

ADVERTISEMENT FOR BIDS

Sealed bids will be received by the City Council of Alexandria, Louisiana, until 10:00 A. M., April 20, 1950, at the office of the undersigned for furnishing all materials and performing all work required for the Storm Drainage Work, Contract Designation Project No. 2, for the City of Alexandria, Louisiana.

Plans, specifications, and proposal forms may be obtained at the office of Pan American Engineers, 1307 Third St., Alexandria, Louisiana upon a deposit of $20.00; said deposit to be refunded if the documents are returned in good condition within ten (10) days from the date of the receipt of bids. Plans may be examined at the above address or at the office of the City Engineer, City Hall, Alexandria, Louisiana.

Each proposal must be accompanied by a satisfactory bid bond, or by a certified check on a member bank of the Federal Deposit Insurance Corporation, payable to the order of the City of Alexandria, Louisiana in an amount equal to five percent (5%) of the total amount of the bid. The performance bond required is one hundred percent (100%) of the total amount of the contract.

The bids submitted will be publicly opened and read at the hour and date specified above in the office of the Mayor at the City Hall.

No proposal may be withdrawn within thirty (30) days after the above scheduled time of opening and the right is reserved to reject any or all bids and to waive any informalities.

HAL T. DULANY
Secretary-Treasurer

(Continued on page 110)

OFFICIAL PROPOSALS
(Continued from page 109)

Bids: April 26, 1950 (676)

State Road Work

Sealed proposals will be received by the State Highway Department at its offices, Dover, Delaware, until 2:00 P.M., E.S.T., April 26, 1950, and at that time and place publicly opened for contracts involving the following approximate quantities:

CONTRACT 993
Federal Aid Project S-92 (1)
BRANDYWINE BOULEVARD
New Castle County
40' Hot-Mix Asphaltic Pavement
1.732 Miles

27,000	C. Y. Excavation
5,600	C. Y. Rock Excavation
700	C. Y. Borrow Pit Stripping
39,000	C. Y. Pit Run Borrow
18,200	T. Waterbound Macadam
8,000	T. Hot-Mix Asphalt Surface
2.5	C. Y. Cement Concrete Masonry
370	C. Y. Cement Rubble Masonry
2,300	L. F. 15" R. C. Pipe
550	L. F. 18" R. C. Pipe
500	L. F. 24" R. C. Pipe
1,300	L. F. 15" Concrete Sewer Pipe
1,200	L. F. 18" Concrete Sewer Pipe
1,800	L. F. 24" Concrete Sewer Pipe
2,500	L. F. 30" Concrete Sewer Pipe
1,400	L. F. 36" Concrete Sewer Pipe
3,200	L. F. 42" Concrete Sewer Pipe
740	L. F. 48" Concrete Sewer Pipe
550	L. F. 4" Vitrified Clay Pipe
425	L. F. 6" Vitrified Clay Pipe
30	L. F. 12" Vitrified Clay Pipe
110	S. Y. Cement Concrete Gutter
17,600	L. F. Integral Curb and Gutter
53,500	S. F. 4" Cement Concrete Sidewalk
7,800	S. F. 6" Cement Concrete Sidewalk
6	Each Catch Basins Type "A"
90	Each Catch Basins Type "B"
14	Each Catch Basins Type "C"
48	Each Manholes
75,000	Lb. Castings
14,000	S. Y. Topsoil
3.0	A. Seeding
3,000	S. Y. Sodding
18	Each Adjusted Manholes
80	L. F. Rest Stone Wall
150	L. F. Reset Stone or Brick Walk
90	T. Flake Calcium Chloride
340	S. Y. Removal Present Pavement

ADVERTISEMENT FOR BIDS
Contract 1045
Federal Aid Project F-186 (1)
Delaware Memorial Bridge Approach
New Castle County
Grading & R. C. C. Paving
0.644 Miles

100,000	C. Y. Excavation
500	C. Y. Borrow Pit Stripping
11,500	C. Y. Selected Borrow
6,150	C. Y. Cement Concrete Pavement
38	C. Y. Cement Concrete Masonry
1,100	Lb. Reinforcing Steel
5,500	Sqs. Wire Mesh Reinforcement
1,500	L. F. 12" R. C. Pipe
550	L. F. 15" R. C. Pipe
400	L. F. 18" R. C. Pipe
180	L. F. 24" R. C. Pipe
190	L. F. 36" R. C. Pipe
120	L. F. 8" Corr. Metal Pipe
2,100	S. Y. 4" Cem. Concrete Gutter
370	L. F. Parkway Curb
1,900	L. F. Wood Shoulder Curb
8	Each End Post Attachments
21,300	S. Y. Topsoiling
4.2	A. Seeding
14,000	S. Y. Sodding

CONTRACT 1057
Federal Aid Project F-38 (5)
NEW CASTLE AVENUE OVERPASS
New Castle County
Steel & Concrete Structure, Ramps & Approaches 0.585 Miles

	L. S. Clearing
	L. S. Grubbing
115,000	C. Y. Excavation
11,000	C. Y. Muck Excavation
1,280	C. Y. Excavation For Structures
6,000	C. Y. Selected Borrow
5,180	T. Quarry Screenings
2,150	S. Y. Removal Present Pavement
1,250	Gal. R. C. 3 Asphalt
1,250	Gal. R. C. 3 Asphalt
50	T. Slag Chips
50	T. Crushed Chips
6,140	C. Y. Cem. Conc. Pavement
120	C. Y. C. C. Approach Slabs
972	L. F. 4' Median Strip
973	L. F. 2' Median Strip
270	C. Y. C. C. Masonry Footings
140	C. Y. C. C. Masonry Piers
260	C. Y. C. C. Masonry Abutments
370	C. Y. C. C. Masonry Deck
675	C. Y. C. C. Masonry Culverts
100	S. Y. Waterproofing
283,000	Lb. Reinforcing Steel
1,395	Sqs. Wire Mesh Reinforcing
240,000	L. F. Structural Steel
550	L. F. Pipe Railing
540	L. F. 12" R. C. Pipe
460	L. F. 15" R. C. Pipe
100	L. F. 18" R. C. Pipe
140	L. F. 24" R. C. Pipe
251	L. F. 36" R. C. Pipe
60	L. F. 8" Corr. Metal Pipe
5,300	L. F. Cast in Placed C. C. Piles
5,740	S. Y. Cem. Concrete Gutter
2,370	L. F. Cem. Concrete Curb
300	L. F. Integral C. C. Curb & Gutter
6,275	S. F. Cem. Conc. Sidewalk
1,150	L. F. Wood Shoulder Curb
16	Each Catch Basins Type "B"
2	Each Catch Basins Type "C"
6,560	L. F. Castings
2,428	L. F. Wire Rope Guard Fence
24	Each End Post Attachments
40,000	S. Y. Topsoiling
8.3	A. Seeding
4,000	S. Y. Sodding
360	S. Y. Mortared Rip-Rap
	L. S. Removal Existing Culverts
	L. S. Lighting Conduit System

These Contracts are Federal Aid Projects and will be governed by the provisions of the Federal Aid Highway Act as amended.

The Employment Agency for these contracts shall be the Delaware State Employment Service whose offices are located at 601 Shipley Street, Wilmington, Delaware.

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Performance of contract shall commence within ten (10) days after the execution of the contract and be completed as specified.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No. ....."

The right is reserved to reject any or all bids.

The contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

Complete sets of plans and specifications may be obtained after April 16, 1950, upon receipt of five dollars ($5.00) for each contract, which amount will not be refunded.

Make checks payable to the State Highway Department.

STATE HIGHWAY DEPARTMENT
By: J. Gordon Smith, Chairman.
M. Allan Wilson, Chief Engineer.
Dover, Delaware.
March 29, 1950

Bids: April 26, 1950 (678)

Construction of Substructure

PENNSYLVANIA TURNPIKE COMMISSION
Harrisburg, Pennsylvania
NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 A.M. (Eastern Standard Time), the 26th day of April, 1950, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and immediately publicly opened and read aloud, for the following contract:

For the construction of substructure Turnpike Section 31BC, Plum Creek Viaduct, part of the Western Pennsylvania Turnpike Extension in Plum Township, Allegheny County, Commonwealth of Pennsylvania. This section being situated as follows:

Beginning at a point approximately 185 feet West of the Centerline of the center track of the Unity Railways on the West bank of Plum Creek, in Plum Township, at Turnpike Station 1227+70, Allegheny County, thence in an Easterly direction 1,270 feet to a point approximately 420 feet East of the Centerline of the track of the Unity Railways on the East bank of Plum Creek, in Plum Township, at Turnpike Station 1240+40, Allegheny County, a distance of approximately 0.24 miles.

The approximate quantities of the principal items are as follows:

Class U Excavation, 7,000 cu. yd.; Concrete Pier Bases and Abutment Footers, 1,700 cu. yd.; Concrete Pier Shafts and Abutments Above Footers, 3,000 cu. yd.; Steel Reinforcing Bars, 467,000 lb.; Structural Carbon Steel, 4,200 lb.

Copies of plans, specifications, and other contract documents, are on file and open to public inspection at the offices of the Pennsylvania Turnpike Commission, located at Harrisburg, Pennsylvania, on 11 April 1950. Plans, specifications and other contract documents will not be available before this date for inspection or for mailing to prospective bidders. Copies of specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

Plans and contract documents, exclusive of specifications may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the date of the opening of the bids. Refund will be made for all plans and contract documents if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
March 31, 1950

Bids: April 10, 1950 (669)

Sewage Treatment Plant

SEWERS

The Municipal Authority of the Borough of Mifflinburg, Pennsylvania, will accept separate sealed proposals from contractors for the construction of sanitary sewers and separate sealed proposals for the construction of a primary sewage treatment plant, until 10:00 A.M., April 17, 1950, at which time they will be opened and publicly read in the Council Chambers of the Borough of Mifflinburg, at 333 Chestnut Street.

PROPOSAL NO. 1

The principal items of work will consist of the following:

800 feet	15" vit. clay sewer
83 feet	15" reinf. conc. sewer
7680 feet	12" vit. clay sewer
3530 feet	10" vit. clay sewer
10790 feet	8" vit. clay sewer
2600 feet	6" vit. clay services
78	brick manholes
4240 cu. yds.	rock excavation

Engineer's Estimate $129,000.00

PROPOSAL NO. 2

The principal items of work will consist of the following:

1421 cu. yds. structural excavation
636 cu. yds. structural concrete
Pump & control house
10' comminutor
2-250 gpm sewage pumps
6"-12" cast iron pipe & fittings
24'×30' glass enclosure
Engineer's Estimate $83,500.00

Plans, specifications, and proposals may be inspected at the above office or at the office of S. R. Collins, Consulting Engineer, R. D. 2, Lewisburg, Pa., or may be secured from the latter at a cost of $10.00 per set which is not refundable.

A certified check in the amount of 5% of the total bid price must accompany each proposal.

Contract will be awarded within one calendar month of date of letting. The Authority reserves the right to hold proposal and checks of the two low bidders on each project, pending sale of bonds, until award is made. The Authority also reserves the right to reject any or all bids.

Kenneth A. Bidlack, Secretary
The Municipal Authority of the Borough of Mifflinburg,
333 Chestnut Street
Mifflinburg, Pennsylvania.

(Continued on page 111)

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

OFFICIAL PROPOSALS
(Continued from page 110)

Bids: May 3, 1950 (672)

Construction of Portion Expressway

STATE OF RHODE ISLAND AND PROVIDENCE PLANATIONS
DEPARTMENT OF FINANCE
DIVISION OF PURCHASES
NOTICE TO ROAD AND BRIDGE CONTRACTORS

Sealed Proposals addressed to the Division of Purchases, for the construction of the following project will be received by the Division of Purchases at the office of the State Purchasing Agent, Room 123 State House, Smith Street, Providence, Rhode Island, until 10:00 A.M. on the 3rd day of May, 1950, at which time they will be opened and read in public.

R. I. Contract No. 5005, R. I. Federal Aid Project No. U-UG-F143(1), County of Providence, Olneyville Square, Providence, Rhode Island. Construction of a portion of Expressway from end of CONTRACT ONE to the end of CONTRACT TWO at Westminster Street, including Viaducts over railroad, two underpasses at Westminster Street, paving and incidentals in CONTRACT ONE and CONTRACT TWO areas, *Service Road Nos. 1, 2, 3, 5 and 6*, signs, walls and all other appurtenant items of work.

Bids for the above work must be made on blanks furnished by the Department of Public Works, Division of Roads and Bridges. Plans and specifications and Special Provisions may be examined at Room 123 State House or Room 224 State Office Building, Providence, Rhode Island, on and after Wednesday, April 5, 1950, every week day except Saturdays and Holidays, between the hours of 8:30 A.M. and 4:30 P.M. Blanks for submitting proposals may be obtained thru the office of the State Purchasing Agent at the address above stated. A deposit of $100.00 shall be made for each set of contract documents. $50.00 will be refunded if plans and specifications are returned in good condition prior to May 24, 1950.

A certified check or bid bond payable to the State of Rhode Island, or cash, in the amount of $100,000 must be furnished by each bidder.

This Proposal Guaranty will be returned after the Contract has been executed. A performance bond of one hundred (100) percent of the contract price with a satisfactory surety company will be required of the successful Bidder. The Division of Purchases reserves the right to reject any or all bids.

FEDERAL REQUIRED CONTRACT PROVISIONS. The attention of prospective bidders is called to the fact that this project is to be bid upon and the contract executed under the rules and regulations for carrying out the Provisions of the Federal-Aid Highway Act of 1944 and the Special Provisions, dated July 2, 1948, as amended and supplemented, as required by the Department of Commerce, Bureau of Public Roads.

EMPLOYMENT LISTS. A local employment service has been designated by the R. I. Employment Service to prepare the employment lists for the project. Requests for men to be employed on this project shall be submitted to the District Office at 112 Union Street, Providence, Rhode Island.

WAGES OF LABOR. In conformity with the provisions of Chapters 290 and 291, General Laws, 1938, the minimum wages for a day's work paid craftsmen, teamsters and laborers shall not be less than the customary and prevailing rate of wages for a day's work in the same trade or occupation in the locality where the work is undertaken. Such a schedule of wages has been established on a minimum hourly basis and is on file in the office of the State Department of Labor. The contractor shall pay not less than these minimum wage rates.

The attention of bidders is invited to the fact that the R. I. Department of Public Works, Division of Roads & Bridges, has been advised by the Wage and Hour Division, U. S. Department of Labor, that contractors engaged in highway construction work are required to meet the provisions of the Fair Labor Standards Act of 1938, (52 Stat. 1060).

SUBLETTING OR ASSIGNING THE CONTRACT. The attention of Bidders is directed to the Standards and or Special Provisions covering subletting or assigning the contract.

DEPARTMENT OF FINANCE
DIVISIONS OF PURCHASES
By: FRANKLYN A. ADAMS
State Purchasing Agent

OFFICIAL PROPOSALS

Bids: May 1, 1950 (666)

Highway in Bolivia

PROPOSALS FOR THE COMPLETION OF THE COCHABAMBA-SANTA CRUZ HIGHWAY, BOLIVIA

Sealed proposals for the completion of the Cochabamba-Santa Cruz Highway will be received by the Ministry of Economy at La Paz, Bolivia, and by the Bolivian Embassy, Continental Building, 15th and K Sts., Washington, D. C., or at the office of Knappen Tippetts Abbett Engineering Co., 62 West 47th Street, New York, N. Y. Consulting Engineers. The contract will be awarded on the basis of cost plus a fee with a bonus and penalty provision.

The work consists of the following principal items of construction:
1. Reconditioning existing road-building equipment.
2. Purchasing additional equipment.
3. Construction of approximately 290 kilometers of highway and related works.
4. Completion of approximately 104 kilometers of paving and all incompleted culvetts and bridges.

KNAPPEN TIPPETTS ABBETT ENGINEERING CO.
62 WEST 47TH STREET,
NEW YORK 19, N. Y.

BOLIVIAN EMBASSY,
CONTINENTAL BUILDING,
14th AND K STREETS,
WASHINGTON, D. C.

CORPORACION BOLIVIANA DE FOMENTO,
OFICINA CENTRAL,
EDIFICIO LA URBANA, 4° PISO,
AVENIDA CAMACHO,
LA PAZ, BOLIVIA.

Bids: April 19, 1950 (659)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Chapter 63, Laws of 1936, as amended, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on Wednesday, April 19, 1950 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 3				
		Wm. Robinson, District Engineer, 301 East Water Street, Syracuse, N. Y.				
Onondaga & Madison	MT 50-1P MT 50-2P OT 50-2P OT 50-3P	Mohawk Thruway Ontario Thruway Proj. F&U 1059-2; 1071(2)	18.39	9" Cem. Conc. Pvmt. 2 at 50' Wide = 18.37 mi. Asph. Conc. Opt. = 0.02 mi. Paving on Access Rds. = 1.88 mi.)	$185,000 Plans $50.00	$3,617,000
		DISTRICT No. 4				
		A. R. Mellinger, District Engineer, Barge Canal Terminal, Rochester, N. Y.				
Monroe	FAC 50-5 FAS 1150-4	Rochester City-Mount Read 5.68 Boulevard Mount Read Boulevard-Lake Ontario State Parkway, Pt. I Proj. No. I 1063-1)		Br. Con. = 0.27 mi. Fdn. Cvs. & Asph. Conc. Ty. 2A on Dr. = 2.76 mi. Asph. Conc. Ty. 2A = 0.65 mi. Widening 46' 5" Alpha I Beam Alpha = $154.00	$140,000 Plans $100.00	$2,508,000
		DISTRICT No. 5				
		C. R. Warren, District Engineer, 65 Court Street, Buffalo, N. Y.				
Erie	OT-FU(1) 50-1	Ontario Thruway (Walden 3.61 Ave.-Cleveland Drive) and Main St. Connection Proj. U1067(3)		9" Cem. Conc. Pvmt. 2 at 37' & 25' Wide = 3.04 mi. Asph. Conc. Opt. = 0.57 mi. Incl. Access Roads, Etc.)	$80,000 Plans $25.00	$1,484,000
		DISTRICT No. 8				
		J. S. Boyd, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.				
Orange	FAS 1150-2P FARC 50-9	Goshen-Fair Oaks, Pt. 2, S. H. 41-3 and Pt. 3, S. H. 47-10 Middletown-Bloomingburg, S. H. 210 Proj. F1050(4)		9" Cem. Conc. Pvmt. 2 at 24' & Var. Wide = 7.93 mi. Asph. Conc. Opt. = 0.21 mi. Incl. Access Roads, Etc.)	$120,000 Plans $50.00	$2,031,000
Rockland	PIP 50-2	Palisades Interstate Park-3.14 way, Pt. 1 (Willow Grove-Torail)		Grading, Structures & Misc. Paving Conc. Elim. Arch 80' Conc. Rig. Frame Arch 2 Span 62.81' Ea. Conc. Rig. Frame Arch 74.01' Conc. Barrel Arch 35.38' Conc. Rig. Frame Arch 28.33' Conc. Closed Box 2 Span 11.55' Ea. Conc. Rig. Frame Arch 31.33' Conc. Barrel Arch 35.37'	$140,000 Plans $50.00	$2,472,000
		DISTRICT No. 9				
		F. W. Donovan, District Engineer, 71 Frederick Street, Binghamton, N. Y.				
Sullivan	FARC 50-10	Liberty-County Line, Pt. 1, 2 mi. S. H. 3223 Proj. F338-1(5)		9" Cem. Conc. Pvmt. 24' 6" Wide = 2.36 mi. Asph. Conc. Opt. = 0.50 mi. 50' Span I-Beam 83.6° Span Alpha I Beam 85.2° Span Alpha I-Beam 68.5° Span Alpha I-Beam Alpha = $454.00	$95,000 Plans $50.00	$1,705,000
		DISTRICT No. 10				
		J. J. Darcy, District Engineer, Montauk Highway at Little E. Neck Road, Babylon, L. I., N. Y.				
Nassau	FARC 50-7	North Hempstead Turnpike, 0.42 Br. I.S. H. 9018 Proj. F541-6)		Painting Deck Plate Girder Bridge & Appurtenances	$1,800 Plans $10.00	$31,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of State of New York, Commissioner of Taxation & Finance, for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

C. D. TALLAMY, Supt. of Public Works

SEARCHLIGHT SECTION

Classified Advertising

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** :EQUIPMENT :USED OR RESALE

UNDISPLAYED RATE

(Not available for equipment advertising)

$1.20 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line. INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.

Replies are forwarded each day as received at each of the offices mentioned without additional charge.

Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

DISPLAYED RATE

The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.

An odvertising inch is measured ⅞ inch vertically on one col., 3 col — 30 inches to a page. E.N.R.

New advertisements received by April 17th will appear in the April 27th issue.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

WANTED CONSTRUCTION SUPERINTENDENT

Large heavy construction firm doing business along Middle and South Atlantic Seaboard is interested in securing the services of a top flight superintendent, thoroughly skilled in waterfront construction and in handling of all types of floating equipment. Work includes cofferdams, pile driving, timber work, concrete construction and steel erection. Steady employment on good sized projects. Fine opportunity for the right man to make a permanent connection with a good salary. Reply

P-2361, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

ESTIMATOR

Experienced ENGINEER, familiar with Oil Refinery design and capable of estimating process equipment from flow diagrams.

Give full information, experience record and salary expected.

ARTHUR G. McKEE & CO.
2300 CHESTER AVE
CLEVELAND 1, OHIO

WANTED SUPERINTENDENT

for sewage and waterworks by old and well-established firm, operating principally in Indiana, but planning expansion. Write only for interview. State age, experience, qualifications, reference and salary expected.

P-2548, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STRUCTURAL STEEL ESTIMATOR

Well known New England fabricating company has an exceptional opening for young experienced structural steel estimator. A real opportunity exists for a man with estimating and sales ability. Give in detail experience, education etc. References will be required. Replies held strictly confidential.

P-6047, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

WANTED

2 Structural detailer—checkers

Permanent jobs for good men with experience in all types of bridge and building work.

Apply by letter, giving resume of experience, also salary desired.

PAXTON & VIERLING IRON WORKS
P.O. BOX 1085 OMAHA, NEB.

WANTED
**BRIDGE DESIGNERS,
DESIGNER DRAFTSMEN, RESIDENT
HIGHWAY ENGINEERS, SOILS ENGINEER**

Experienced men wanted. State qualifications, age, salary and date available in first letter. Construction period, 24 months. Location, Eastern or Western Pennsylvania.

P-6192, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

ESTIMATOR

Wanted by Phila. firm for large sewers, bridges, etc. Must have had experience with contractors in similar work. State salary, experience and when available.

P-2299, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

GRAVEL PLANT SUPERINTENDENT

Wanted for operating and managing portable and permanent plants in Indiana and Michigan. State experience, references and salary.

P-6206, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED
**BRIDGE DESIGNERS,
DESIGNER DRAFTSMEN, RESIDENT
HIGHWAY ENGINEERS, SOILS ENGINEER**

Experienced men wanted. State qualifications, age, salary and date available in first letter. Construction period, 24 months. Location, Eastern or Western Pennsylvania.

P-2412, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

ENGINEER, LICENSED
in New York State

Also Sales Engineer

Experienced in bridge construction and alterations. Permanent position for right man. Reply stating experience to

P-6106, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

ESTIMATOR Wanted

Experienced in heavy Grading, Paving, Sewers and Bridges. Splendid opportunity with growing concern. Location Long Island, New York. State age, experience, salary, and full particulars.

P-6041, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

CIVIL SERVICE

SANITARY AND Water Pollution Control Engineers. Technical or administrative positions available. 2 to 8 years experience sanitary and public health engineering in treatment and disposal of sewage and industrial wastes plus college degree in sanitary, public health, chemical or civil engineering. Must be eligible for California State license. Many positions in California State Government as beginning annual salaries $4,092 to $7,356. Official application must be filed by May 20. Write at once to Dept. R, Recruitment Section, State Personnel Board, 1015 L Street, Sacramento 14, California.

WANTED, ENGINEERING assistant for Mayor of City of North Adams, Massachusetts. Must have broad experience in all phases of municipal engineering. Salary six thousand dollars per year. Submit written statement setting forth, age, education and past experience to Mayor's Office, City Hall, North Adams, Massachusetts.

POSITIONS VACANT

WANTED: EXPERIENCED Structural Designers capable of taking responsible charge of work. Seelye, Stevenson & Value, 101 Park Avenue, New York, N. Y.

CONSTRUCTION SUPERINTENDENT — Experienced man wanted for building construction work. Firm located in New England. In reply give experience, references, education and salary expected. P-6126, Engineering News-Record.

WANTED CIVIL engineer experienced in taking off quantities, preparing estimates and supervising projects by general contractor in Minnesota. State age, experience, references, salary and when available. Write P-6127, Engineering News-Record.

STRUCTURAL STEEL Designer and Estimator wanted by leading central west fabricator. Permanent position and good opportunity with large well established and growing company. Please state qualifications, past experience and salary requirements. P-6104, Engineering News-Record.

WANTED: ESTIMATOR by General Contracting Firm in Central Pennsylvania. Applicant must have experience in all types of general building construction. Age between 30 and 40 preferred but not essential. Advise education, experience and salary expected. P-6145, Engineering News-Record.

EUROPEAN STEEL Producer wants engineer experienced with sheet piling for selling on commission basis. Submit references. P-6137, Engineering News-Record.

DESIGN DRAFTSMAN for Mechanical Department large Copper Company Chile, South America. Thorough experience required design, detail, and checking of reinforced concrete and structural steel buildings, bridges, foundations and retaining walls. Experience mechanical design desirable but not essential. Graduate engineer with some practical experience U. S. preferred. Three-year contract, transportation both ways and salary while traveling paid by company. In reply give complete details. P-6260, Engineering News-Record.

BATCHING AND Concrete plant designer and production man, 35-45, preferably with Blaw-Knox or Butler bin experience, for permanent position at San Antonio, Tex. Salary $600 month with $12,000 guarantee through profit participation. P-6251, Engineering News-Record.

SUPERINTENDENT: CAPABLE of handling small and medium size bridge jobs. Must have experience on this work. Work is in Pennsylvania, Delaware, Maryland and New Jersey. Give age, education, experience and salary desired. P-6256, Engineering News-Record.

STRUCTURAL DRAFTSMAN, first class, long experience required. Good salary, steady work. Reply by letter to City Iron Works, Inc., 850 New Park Ave., Hartford 6, Conn., or telephone 33-2696.

SELLING OPPORTUNITY OFFERED

ADDITIONAL INCOME. Men with good contact to Power companies, News-Enq., N. Y., Pa., Ohio, Ky., Calif. required. SW-6258, Engineering News-Record.

WANTED—CITY ENGINEER

Western North Dakota city of 10,000 population need a City Engineer. Must be registered or eligible for registration in North Dakota. Position now vacant. Start immediately. Start about $3600.

City Auditor Williston, N. Dak.

A COURSE OF INSTRUCTION BY MAIL IN

STRUCTURAL ENGINEERING

Thirty-ninth Year

OUR COURSES HAVE HELPED THOUSANDS
to better positions and to pass State Board Examinations

- Complete Structural Engineering Course.
- Public Works Structures.
- Architectural Engineering.
- Special Course C (State Board Exams).
- Reinforced Concrete Engineering.
- Structural Steel Designing.

Monthly payments permissible. Information sent without obligation. WRITE TODAY

WILSON ENGINEERING CORPORATION

College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

(Continued from the opposite page)

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service established 1927, is geared to needs of high grade men who seek a change of connection under conditions assuring full protection to present position. Send name and address only for details. Personal consultation invited. Jim Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

MECHANICAL DESIGNER or Plant Engineer, 8 yrs. chemical plant layout, process piping, machine design and maintenance, 7 yrs. diversified and supervisory experience. PW-6059, Engineering News-Record.

PROFESSIONAL ENGINEER desires administrative position in upper echelon of engineering staff or at executive level in technical advisory status. Registered to practice in several states for civil, structural and mechanical problems involving material firm experience in rubber, chemicals, paper and power; design, construction, estimates and reports. High four figures salary, age 47, married, available on arrangement. Employment consultant of contemplated change. PW-2463, Engineering News-Record.

GENERAL FOREMAN, shaft, tunnel, quarry; drills, sewer, other open cut excavation; rock. Speak Spanish. Avail. May 1st. PW-6124, Engineering News-Record.

CIVIL ENGINEER with 25 years experience in design, estimating, construction supervision. Considerable experience in earthwork, roads, streets and bridges. Desires change in employment Southwest preferred. PW-6092, Engineering News-Record.

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation for quality, of highest ethical standards, to individuals of executive, managerial and technical stature whose initiative or long past performance record and present position protect. Send only name and address initially.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N. Y.

ESTABLISHED 57 YEARS

POSITIONS IN

Engineering	Appraisals
Architecture	Chemistry
Manufacturing	Teaching
Contracting	Mining
Metallurgy	Sales

Our many years of specializing in Engineering and Technical help enables us to number among our clients the most desirable employers and to place at your disposal a most attractive method of getting in touch with parties needing men of your qualifications.

THE ENGINEERING AGENCY INC.
53 W. Jackson Blvd. Room 1662 — Chicago 4, Ill. Harrison 7-4056

WANTED CONSTRUCTION POSITIONS

If you need construction help, get in touch with us. We are sending Employment Information Bulletins to prospective construction men every day. Send us your job requirements and we will list them. No charge to you nor to the applicant if he takes the job. We are an employment information service, not an employment agency. Foreign and Domestic Opportunities. Waseca 1, Minn.

WANTED

DISTRIBUTORS AND SALES AGENTS

Long established concern of operating specialty products used and endorsed by many foremost concerns. Products saleable to all kinds of factories, institutions, steamship, railroad companies and municipalities. Give full particulars. Will be treated confidentially.

RW-6250, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

POSITIONS WANTED

CONSTRUCTION EXECUTIVE. Experienced general contracting. Manager of a General Contracting Organization. Project Manager. Estimator, superintendent of construction. Architecture. Practical Architecture. Project Manager. Specifications Writer. Superintendent of Construction. Real Estate. Real Estate Manager. Real Estate Appraiser. Contact Man. Sales. Top firms. University graduate and Registered Architect. More than 20 years experience. In five figures salary bracket. PW-6272, Engineering News-Record.

CITY MANAGER. Assistant—desires position to train as city manager. Age 25—Degree Civil Engineering from outstanding engineering school. 4 years road construction experience. Will accept city engineer under city manager government. PW-6225, Engineering News-Record.

PLANT LAYOUT and Design Engineer, 45, experienced on organizing complete paper mechanical installations, board and field work. New York area preferred. PW-6226, Engineering News-Record.

CIVIL ENGINEER, P.E. License. Age 26. 3 years experience in planning, designing, administration, purchasing and plant engineering sections, construction and maintenance. Desires association with Architect or Consulting Engineer or responsible position with General Contractor. Interested in well paying opportunity with future. PW-6219, Engineering News-Record.

GRADUATE CIVIL Engineer, 37, with 10 years construction experience, desires position as assistant superintendent with contractor with possibility of eventually becoming member of firm. PW-6247, Engineering News-Record.

STRUCTURAL ENGINEER registered 25 years design-construction buildings-subways-docks-ocean terminals-foundations anywhere. PW-6220, Engineering News-Record.

CIVIL ENGINEER BCE 1946, age 24, married. 4 years varied experience construction in U.S. and Far East. Prefer Southwest, or Foreign. PW-6236, Engineering News-Record.

SANITARY ENGINEER Executive. Masters Degree, P.E. licensed, 25 years intensive experience in detail and supervision of investigations, reports design, specifications and construction of water supply, water treatment, sewers, sewage and waste treatment and drainage, foreign experience, can furnish references relating ability to handle men and produce results on projects from inception to completion. PW-6229, Engineering News-Record.

OFFICE MANAGER

13 years continuous construction experience in field office management, cost accounting, and purchasing for heavy industrial projects, earth moving and marine installations — domestic and foreign. Lump sum, cost-plus, unit price contracts. Available immediately.

PW-6274, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

LEARN TO ESTIMATE

Today, more than ever before, you must know how to analyze building costs. If you want to become a successful builder, learn how to prepare a correct estimate in a hurry. Get in on the profitable work now available wherever you turn. Your success is assured if your estimates are right; otherwise you are licked before you start.

The Tamblyn **System of Estimating** will make a real estimator out of you in a few weeks of your spare time. We are so sure that you will want to learn it, that we will send you our complete home study course for ten days examination absolutely free. If you don't think it is the finest thing you ever saw, just return it and it won't cost you a cent. If you like it and want it, send us $8.75 when 10 days are up and $7.50 per month until $38.75 is paid.

This estimating system is based on forty years of actual construction experience. It has been sold all over the world for more than twenty years. Thousands of estimators and contractors swear by it. Our offer isn't hot air and big talk. We don't give you a diploma or a lapel button, but we do teach you down to earth estimating which will bring you profitable business.

Just send your name and address today, and we will mail you the complete course at once for your approval.

TAMBLYN SYSTEM
1115 So. Pearl St., E-401
Denver, Colo.

POSITIONS WANTED

SUPT. OR Assistant, shaft, tunnel, dam, quarry, sewer, tunnel, mine shaft-pit, rock excavation. Speaks Spanish. Could start or consider Argentina. Avail. May 1st. PW-6125, Engineering News-Record.

GENERAL SUPERINTENDENT — 50 — A-1 engineer always in top salary bracket. Former employers will say worth it. 25 years responsible charge major buildings and heavy construction. College graduate. Address PW-6265, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, broad experience power and industrial plants. Deep foundations, mass and reinforced concrete. Responsible handling of large operations. PW-6191, Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

CHIEF ESTIMATOR. Thirty years experience all types buildings, reinforced concrete and masonry structures as Estimator, Engineer, Superintendent and Project Manager. Practical engineering with executive ability, cost consciousness, and familiar with present competitive conditions, wants position with a medium size General Contractor. Available immediately. Address Apartment 227, 2501 Ames Street, N.W., Washington 2, D. C., or telephone Dupont 4561.

ENGINEER-EXECUTIVE, CE and ME backgrounds, good organizer and administrator, 27 years of experience in major development programs, hydro, steam, industrials, bridges. Now in private partnership. Seek broader opportunities and responsibilities in resource or industrial development, government or private, domestic or foreign. PW-6194, Engineering News-Record.

ENGINEER EXECUTIVE BS in C.E. Age 37. 15 years construction management, supervision, design, much utilities experience, in U.S. and Far East. Interested in Europe or U.S. at not less than $12000.00 per year. PW-6280, Engineering News-Record.

(Continued on the following page)

SURVEYING INSTRUMENTS
USED • REBUILT • SALE
RENT • REPAIRING

U. S. AIR CORPS TYPE
NEW, SAFER, SHOCK RESISTANT
SUN GLASSES
Reduce Eyestrain From Glare & Harmful Rays
Cool green meniscus curved lenses in gold plated frames, pearloid coated bar and nose pads. Made to meet U. S. Govt. specifications. Complete with case. Reg. $10.00 Quality
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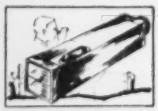

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NEW IMPROVED HAND
SIGHTING LEVEL
COMP. WITH U. S. ARMY PLASTIC POUCH
Precision built, easy to use. Needed when laying drains, pipe lines, foundations, grading and determining depressions or elevations.
SPECIAL LOW PRICE $1.85
SHIP CHG. 15c EXTRA EACH

BE SAFE—BE SURE ON LAND OR SEA
Brand New U. S. Navy
POCKET COMPASS
DEPENDABLE — ACCURATE
Has Many Features Not Found in Compasses Many Times This Price.
A fine precision compass designed for hand use. Has water tight transparent plastic case and luminous dial marked 0 to 360 degrees. Guaranteed.
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The Oldest Equipment House in Phila.

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Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade. A complete line of Engineering Instruments and Equipment for field or office. Write for catalog N R 04
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WORLD'S QUALITY SURVEYING INSTRUMENTS
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NEW • REBUILT
Replace your platinum wire or spider web reticle with the new Gurley *glass* reticle. Metallic filaments deposited on Gurley glass reticles are sharply defined, equally visible against either very bright or dark background.
Patterns to suit every surveying need.
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SPECIALIZED REBUILDING
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All makes and models expertly repaired in modern shop. All work guaranteed.
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Midwest Representative: W. & L. E. Gurley
NATIONAL BLUE PRINT CO.
Established 1914
210 S. Canal St. Chicago (6), Ill.

(Continued from page 113)

PART TIME WORK WANTED

LAYOUT DESIGN. Estimates. Specs—Plants, material handling buildings, industrial structures. Timber, steel, concrete. licensed P.E. PTWW-6101, Engineering News-Record.

FREE LANCE Engineer, metropolitan area. Steel and reinforced concrete design on buildings, structures and foundations. Shop drawings prepared for contractors and builders. PTWW-6120, Engineering News-Record.

TECHNICAL WRITER-Editor-Civil engineering background, national magazine experience, desires part-time assignments editing house organs, preparing trade-paper advertising and promotional programs, preparing operating handbooks, training texts. Can prepare and handle all details. PTWW-6170, Engineering News-Record.

ENGINEER SKILLED struct. designer. Know const. methods, costs, and contracting practices. Let's discuss your needs. Box 863, Philadelphia 5, Pa.

SELLING OPPORTUNITY WANTED

DESIRE CONSTRUCTION equipment sales position with eventual sales management in mind. Have plenty experience in the equipment business and as a contractor's supervisor and am still young. Reply SA-6114, Engineering News-Record.

SALES ENGINEER desires technical sales with Midgley Mpls-St. Paul area. Machine tool design and sales exp. Technical appraisal exp. most types buildings and machinery. Eng. education Age 31. Good earnings record. SA-6246, Engineering News-Record.

BUSINESS OPPORTUNITY

Engineer

with long and broad experience in Sanitary and Civil Engineering is seeking an opportunity to associate with Consulting Engineering Organization as Associate or Partner. If desired could bring several licensed engineers with broad training in this field. Outstanding reference as to ability to handle men and produce results. BO-6230, Engineering News-Record.

PATENT ATTORNEY

Patent Practice

before U. S. Patent office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommell, Registered Patent Attorneys, Suite 6-C, 815-15th Street, N. W., Washington 5, D. C.

FOR SALE
Survey business established 25 years in large city, in Michigan. Small amount of cash needed.
BO-6255, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

BEAM STRENGTH determined without computation. "NOMOGRAM" covers all common load conditions. A straight edge and chart do the work for you.
8½"x11"—$1.50 17"x22"—$1.75
Large discount on 25 or more, with additional 20% discount for Colleges.
LEON CADIGON, Engineer, *(Registered)*
51 Commercial St. Adams, Mass.

Notice of Sale of City Property

Notice is hereby given that the City of Alexandria will offer for sale at public auction at 2:00 P. M., April 26, 1950 at the Administration Building of the Municipal Airport for cash to the highest bidder a certain railroad spur track running from the Alexandria Municipal Airport to the property of the Texas and Pacific Railway Company, a distance of 6.08 miles and made up of 1,620 lineal feet of 5 inch rail at 28.67 pounds per lineal foot and 31,109 lineal feet of 4 ¼ inch and 3 ¾ inch rail at 26.67 pounds per lineal foot or a total of 841,640.40 pounds.

The City reserves the right to reject the highest bid if same is not considered to be the fair value of the property and after said bids are made said property may be withdrawn from sale for said reason.

HAL T. DULANY,
Secretary Treasurer, Alexandria, La.

L.B.SMITH INC. OFFERS

SHOVELS — CRANES

Lorain 77 diesel powered 1½-yd. shovel and crane.

Marion 1-yd. diesel powered heavy duty truck crane on heavily reinforced Mack.

Lorain 40A ¾ yd. shovel-clam, 30" cats.

Lorain 40 truck crane, Waukesha engine, mounted on Mack chassis.

P&H Model 100 ⅜-yd. shovel.

SHOVEL & CRANE ATTACHMENTS

Lorain 75 shovel attachment.
Chain crowd L-40-41 shovel attachment.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Lorain 40 Hi-Lift shovel attachment.
Bucyrus-Erie 30B tunnel front attachment.
Koehring 301 dragline fairlead.

Backhoe Buckets & Attachments

¾ yd Lorain, 40, LBS ☆6105, 44" cutting width, teeth, sheave.
27" outside width drop bottom type LBS ☆1033, good condition.
26" outside width solid bottom type LBS ☆4077, good condition.
¾-yd Amsco 40" cutting width, LBS ☆8101.
Lorain 30 hoe attachment.

NEW TAGLINES

McCaffrey Model 648 for 1¼ to 2-yd crane.
McCaffrey Model 636 for ¾ yd to 1-yd crane.

SHOVEL DIPPERS

Lorain 41, ¾ yd, LBS ☆7433, new condition.
New Lima 1-yd, Amsco, LBS ☆2295.
Bucyrus-Erie 1¼-yd gas air, LBS ☆3782, fair.
Lorain 75 manganese 1¼ yd. LBS ☆7233, teeth and bail.
Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS ☆2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS ☆5361.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS ☆5763.

CLAM—DRAG—SCRAPER BUCKETS

AIR COMPRESSORS

Worthington two-stage, water-cooled, vertical 250☆, 60 CFM, new condition.
Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.
Gardner-Denver 105 cubic foot with air receiver, hose reel, driven by power take-off and mounted on 1941 Ford.
Gardner-Denver air-cooled 105 cubic foot with air receiver, V-belt drive from power take-off and mounted on 1942 Ford chassis with Wood two-yard dumpo body.
LeRoi 2-stage 105 cubic foot air-cooled, skid mounted, built-in tool boxes, hose reels and hose.
Gardner-Denver two-stage 160 cubic foot skid mounted.
Schramm 210 cubic foot with International UD14 diesel.
Worthington 210 cubic foot, two-stage, air-cooled, on steel wheels with Hercules diesel.
Chicago Pneumatic 210 cubic foot, two-stage, air-cooled, Caterpillar diesel on four rubber tired wheels.
Gardner-Denver 315 cubic foot two-stage, skid mounted, Murphy four-cylinder diesel.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
New Gardner-Denver 500 cubic foot two-stage water-cooled, D13000 Caterpillar diesel on 4 pneumatics. Used 2 months.

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Cedarapids No. 1 Kubit.
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2½ ton GMC. New and rebuilt.
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6x6 7½ ton Reo

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New JXD Hercules Gasoline.
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27E Koehring Paver.
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Jaeger type "L" double screed, 10½'-12½', rebuilt.
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830'—Truscon 7"x8" forms, with stakes.
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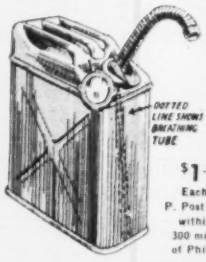

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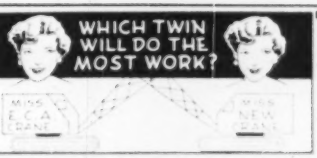

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14"	4	1/16"	1/32"	28 Oz.
16"	4	1/8"	1/32"	28 Oz.
18"	4	1/8"	1/32"	28 Oz.
20"	4	1/8"	1/32"	28 Oz.
20"	5	1/8"	1/32"	28 Oz.
24"	4	1/8"	1/32"	28 Oz.
24"	5	1/8"	1/32"	28 Oz.
26"	5	1/8"	1/32"	28 Oz.
30"	4	1/8"	1/16"	32 Oz.
30"	5	1/8"	1/16"	32 Oz.
30"	6	1/8"	1/16"	32 Oz.
36"	6	1/8"	1/16"	32 Oz.
42"	5	1/8"	1/16"	32 Oz.
48"	8	1/8"	1/16"	32 Oz.

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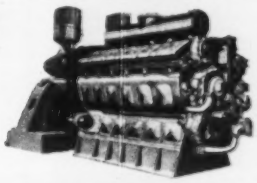

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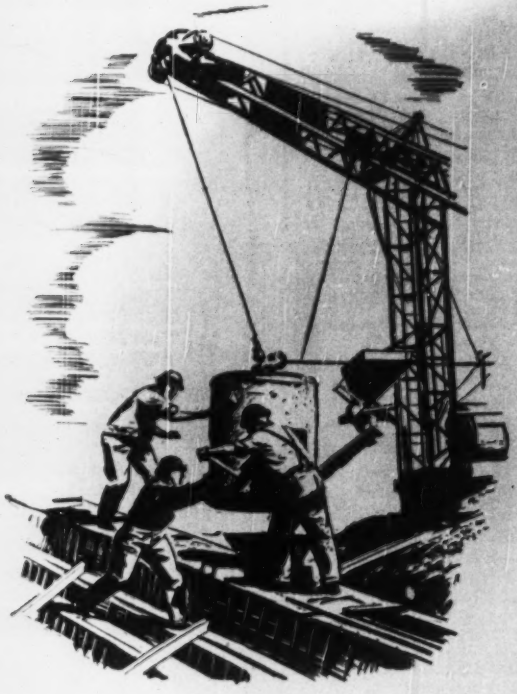

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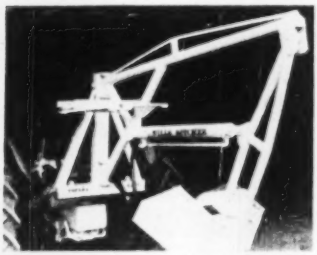

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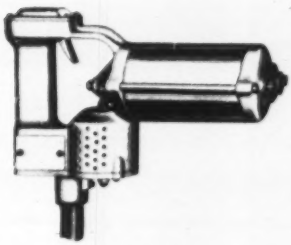
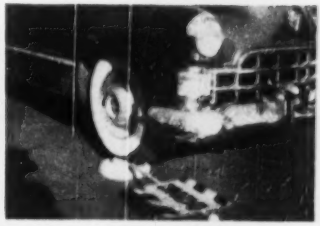


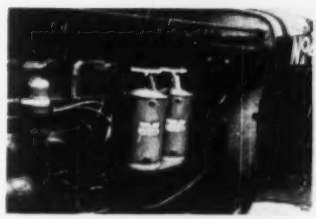
Electric Hammer

Self-contained Model 10 electric hammer has a 2-in.-dia drilling capacity. Rectifying unit of the hammer is incorporated in the handle casting permitting direct connection to a 110-v. ac power source. Unit weighs 11 lb. The complete line of Syntron tools, including the new carbide-tipped tri-point star drills, are available for use with this new hammer.—Syntron Co., 528 Lexington Ave., Homer City, Pa.



Flexible Highway Sign

All-metal flexible highway sign features a folding-down design. It is made in two sizes—28 in. high for road work and protecting lane-marking lines after painting, and a 48-in. high sign for traffic control work. If accidentally hit by a vehicle, the fold-down features prevents damage to sign or vehicle. It also permits flat storage in truck or warehouse. Warning disk can be revolved to face in any direction. Weighted base prevents tipping or blowing over.—The American Coach & Body Co., 9503 Woodland, Cleveland, Ohio.



Lineless Oil Clarifier

Replacement clarifier can be installed on the job on any single or multiple oil filter base using a standard W. G. B. 1-108 replacement oil filter cartridge. Is said to result in 45 percent better oil filtration, and in the cartridge remaining efficient 4 longer. Cartridge can be changed without tools. Models are available for trucks, tractors, or other equipment that has base-mounted oil filters.—W. G. B. Oil Clarifier, Inc., Kingston, N. Y.

Mastic Spray Gun

Heavy mastic coatings are easily sprayed on outside of buildings, walls, and houses with new type spray gun. The Shelburne Model 105 features large-diameter nozzle head which permits delivery of greater capacity of air-material flow for spray of heavy-fibrated or granulated materials without necessity of thinning. It has a fan spray pattern of 14 in. which is

(Continued on next page)

New, Improved Hammer and Tampers

EASIER TO OPERATE, SPEED WORK, LAST LONGER

MASTER'S electric "power blow" hammer is a really tough tool that drills into concrete, chips steel and cast iron, drives stakes, caulks ships—and does other heavy work formerly handled only by "pneumatics." MASTER'S gasoline or electric tampers are light in weight yet deliver powerful blows from 6150 to 8650 per minute. No vibration in the handle to tire the operator. Wide range of attachments for both hammer and tampers. Write for catalog No. 688 and No. 699.

Gasoline Engine backfill Tamper

Flat Tamper Plate used with backfill Tamper

Clay and Shale Spade

Asphalt Cutter

Master Red Seal Power Blow Electric Hammer and Spade

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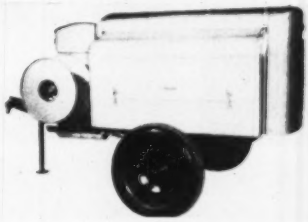
easily changed from fan to round, by simple adjustment. Special pump permits forcing of material direct from drum to gun.—A. SHELBURNE CO., 735 CERES AVE., LOS ANGELES, CALIF.

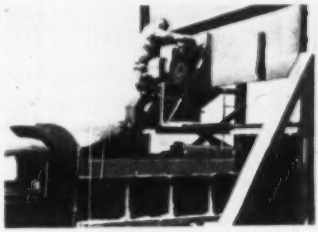


Portable Air Compressors

Single-stage portable air compressors are powered by heavy-duty Chrysler engines. Model 105-P has 105-ft capacity; Model 70-P, 70-ft capacity. Dimensions for 105-P: Length, 115 in., width, 65 in., height, 62 in., weight, without hose reels, 1,945 lb; for 70-P: length, 103 in., width, 65 in., height, 62 in., and weight, without hose reels, 1,465 lb.—GORDON SMITH & CO., 430 COLLEGE ST., BOWLING GREEN, KY.

Streamlined ¼-Inch Drills

Streamlined ¼-inch utility drills are available in three new models. The Model 150 is equipped with a Jacobs 1-B geared chuck; the 160, with a Jacobs Hex-Key chuck; and the 170, with a keyless chuck. Capacities are rated at ¼ inch in metals, and ½ inch in wood. Features include universal 115-volt ac/dc motor, protected switch, light weight, and ease of handling.—CUMMINS PORTABLE TOOLS, 4740 N. RAVENSWOOD AVE., CHICAGO 40, ILL.



Portable Asphalt Mixer

Multi-pug asphalt mixer has a capacity of 1 ton per min. It is powered by a Wisconsin 14-hp gasoline engine, and has a 20-gpm positive-displacement pump. All proportioning of aggregate and asphalt in the Model JR is volumetrically controlled. It is convertible to a stationary plant by mounting under a bin, or used at either end of a portable belt conveyor.—K. E. MCCONAUGHAY, PAINTERS & DECORATORS BLDG., LAFAYETTE, IND.

"At last --- I've got a true LIGHT-DUTY four-wheel-drive"

"and I can mount something on the front end without butchering the truck"

"it's low enough so I can shovel into it without breaking my back"

"Now I can drive on all four wheels all the time, without undue strain on the drive line or excessive front-tire wear."

"and this 70-inch cab is as big as any on the truck market"

NEW!
Model LD
14,500 lbs.
Gross Vehicle Weight

Created for an Entirely New FWD work-range

Now you can have a *true* four-wheel-drive to completely fill the needs which *conversions* and conventional trucks have sought to answer. This new model—the LD—assures you of correct distribution of load and power, for maximum safety and economy. And—it has a *real truck engine*—so essential to efficiency for this work-range. The LD completely answers demand for an FWD in this broad field.

GET ALL THE FACTS on the LD! Ask for this folder, "The Story of the LD". See your FWD distributor or write FWD.

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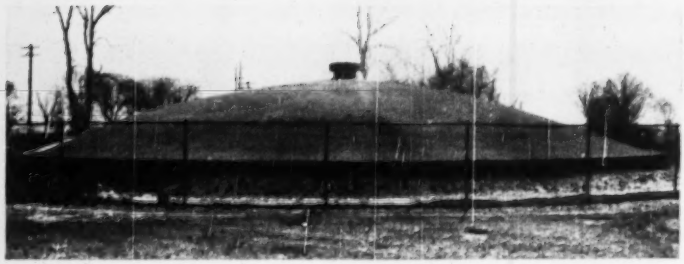

"GUNITE" DOMES FOR EXISTING RESERVOIRS

This photo shows one of the two "GUNITE" dome roofs built by us at Mattoon, Ill. in 1946, on tanks approximately 90' in diameter. The heavy "GUNITE" ring girders of the domes are reinforced with pre-stressed hoop rods. Similar domes have been constructed, by us, on existing brick reservoirs. "GUNITE" reinforcing was placed on the interior of the reservoirs and, when necessary, on the exposed surface above the ground to stop leakage and further deterioration.

We have built tanks of all "GUNITE" construction with capacities from 25,000 to 2 million gallons. Because of the imperviousness of "GUNITE" tanks, assured by our method of pre-stressing, they can be placed completely underground, on the surface or elevated with equal success. They are in use for storage of water, oil, chemicals and dry materials.

Write today, on your letterhead, for a free copy of Bulletin A-2400 which is illustrated with many examples of "GUNITE" for building and repairing tanks, bridges, buildings and other structures.

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"GUNITE" CONTRACTORS
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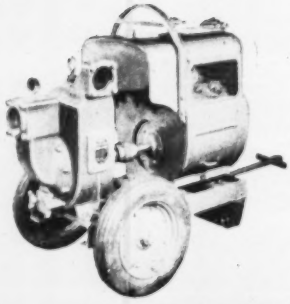

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Manufacturers' Publications

Powered Sidewalk Paver—Dotmar self-powered paver can be used for construction of integral gutter, curb and sidewalks, or sidewalk paving in one operation at speeds to 5 lin ft per min. Bulletin 50 (8 pp) features the use of on-the-job pictures illustrating the various types of screeds and trowels available to provide several types of cross-sections. Complete specification and dimension data are provided.—DOTMAR INDUSTRIES, INC., 503 HANSELMAN, KALAMAZOO, MICH.

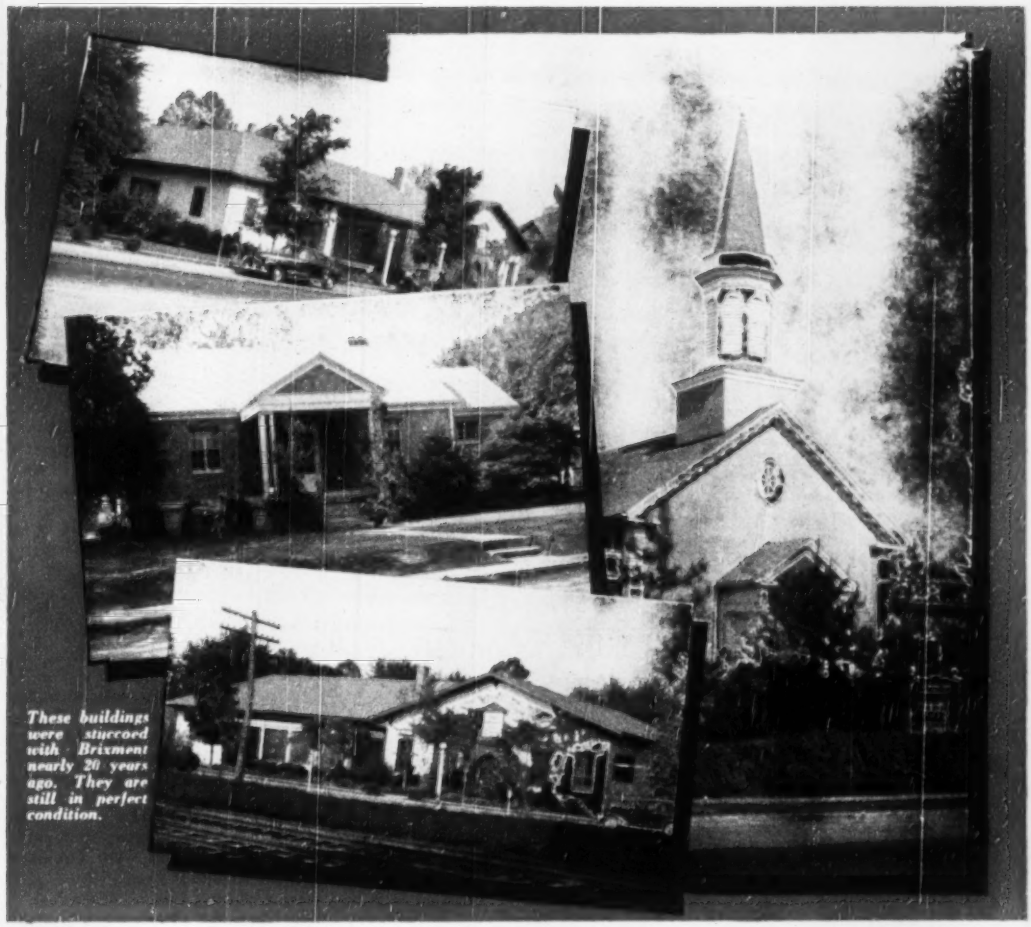
Gratings; Stair Treads—Twelve-page catalog contains illustrations showing grating and stair-tread installations as well as valuable engineering data for use by designers and builders. Features described in the catalog include: Continuous-spiral anti-slip crossbars, alternating right and left; use of electronic weldforging to produce a one-piece structure with high strength and safety; and openings are easily cut out for supports, pipes, and base plates.—KERRIGAN IRON WORKS, INC., 274 MADISON AVE., NEW YORK 16, N. Y.

Swimming-Pool Equipment—Water filters for swimming-pool use are described in a 28-p bulletin. This bulletin, No. 90, describes the Lakeside Spiralo clarifier, pressure-sand filter, filter controls, sand filters, and pool accessories. It discusses the theory of water purification and contains valuable engineering data.—LAKESIDE ENGINEERING CORP., 222 W. ADAMS ST., CHICAGO, ILL.

Fluorescent Street Lights—Post-mounted fluorescent street lights are described in this 8-p data sheet. The bulletin points out the features claimed for the Post-Lites including increased usable light, light at level of use, clear white illumination, and standard light posts are not needed. Bulletin 949 contains complete engineering and installation data.—W. H. LONG CO., 108 W. ILLINOIS ST., CHICAGO 10, ILL.

Allis-Chalmers Catalogs—Large dc motors, dc generators, auto-transformer motor starters, and dry-type transformers are described in four catalogs available from Allis-Chalmers. Bulletin 05B6002A (40 pp) describes construction features of large dc motors for applications requiring wide speed variations and fine speed control. Bulletin 05B7229 (20 pp) provides

(Continued on page 128)



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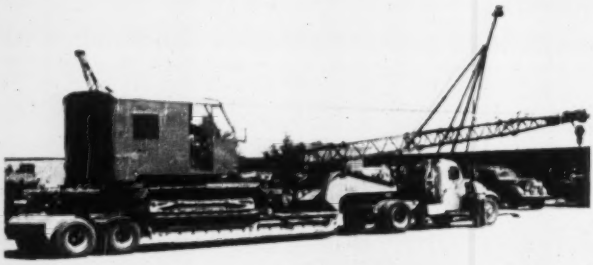

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Road Joint Seals

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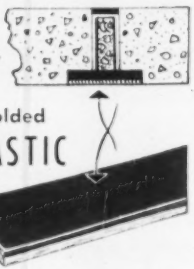

Expansion and contraction joints can be effectively sealed against moisture infiltration at the subgrade with BASEAL—the preformed sealing strip. BASEAL is a Para-Plastic coated saturated felt sheet with a high degree of cohesive, adhesive, resilient and plastic properties. Bond is maintained at all temperatures from 0° to 180°, regardless of moisture conditions. BASEAL is a premolded development of our widely used Hot-Poured PARA-PLASTIC—the superior rubberized asphalt joint sealing compound. BASEAL is available in any width and length in ⅛" thicknesses.

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SERVICISED PRODUCTS CORP.

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answers to efficient, reliable de generator operation under all conditions of service. It contains descriptions of units larger than 150 kw or 0.3 kw per rpm, including 2 and 3-wire generators and exciters, both engine and coupled type. Bulletin 61B6382A (8 pp.) discusses the versatility and flexibility of dry-type transformers available in a wide range of sizes. Bulletin 14B7215 (4 pp.) describes the Type RMC manually operated reduced-voltage auto-transformer motor starter.—ALLIS-CHALMERS MFG. CO., 1015 S. 70TH ST., MILWAUKEE, WIS.

Concrete Vibrators—Complete line of Mall concrete vibrators is discussed in new booklet. It is fully illustrated and contains complete specifications for the various models available. Featured in the catalog are new models of vibrator power units and an entirely new method of connecting flexible shafts in various lengths. Increased hp ratings are announced for several of the power units.—MALL TOOL CO., 7730 S. CHICAGO AVE., CHICAGO 19, ILL.

Hydraulic Swing Loader—Folder illustrates use of Mandt unit as a swing loader, mobile crane, and backhoe. The bulletin describes various types of buckets available for use with the unit; lists several features including full hydraulic operation, positive power control, and high dumping clearance; and lists complete specifications and dimensions. The bulletin is well illustrated with photographs showing the unit in action and its component parts. —MANDT MFG. CO., 490 GOODALE ST., COLUMBUS 8, OHIO.

Sewer-Cleaning Equipment—Complete line of sewer-cleaning equipment and accessories is described in 54-p catalog. The catalog features use of actual photographs to show applications of the equipment. The Turbine equipment is designed to meet every sewer-cleaning requirement.—TURBINE SEWER MACHINE CO., INC., 5210 W. STATE ST., MILWAUKEE, WIS.

Crushing and Screening Plants—Bulletins are available describing features and construction of Cedarapids equipment. Bulletin RIP 1 (4 pp.) describes the dual-purpose Rock-It plant for producing road rock or ag lime or a combination of both in a single operation. It features the use of a diagrammatic flow sheet. Dimensions, specifications, and complete descriptions of each standard unit included in the machine are contained in the bulletin. Bulletin SPP 1 describes a single-pass portable crushing plant

(Continued on page 130)

GM Series 71 Diesels power a fleet of 28 Euclid bottom-dumps working for S. A. Healy Co. on construction of 200-ft. high Neversink Dam.

Good Diesels keep good company

Today the list of contractors who operate equipment powered by General Motors Series 71 Diesels reads like a "Who's Who" of the industry.

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These modern 2-cycle Diesel engines pack more power in less space—they do their work easily and fast. With power at every downstroke, they deliver high torque that gives them quick get-away and smooth, steady up-grade pull even with a punishing load.

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Any machine with GM Diesel power is a better machine—sturdy, dependable, economical. So whatever equipment you buy, it will pay you to specify a GM Diesel engine.

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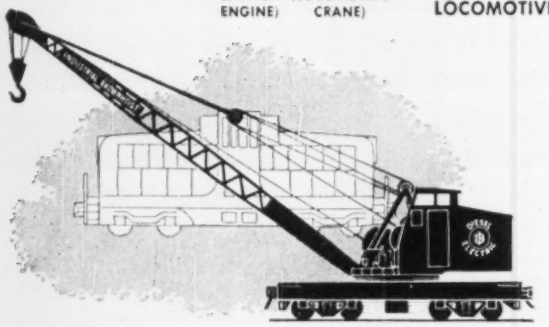

Two big pieces of material handling equipment in one — that's what you get in the Brownhoist Diesel Electric Locomotive-Crane — a heavy-duty switch engine, and a powerful locomotive crane of 30 tons capacity, and up.

New clear-vision boom design allows operator an unobstructed view through the lower end of the boom, an area that is a blind spot on many cranes.

And the Monitor-type cab assures 360° visibility from the operator's position. Safety engineered design gives 14" clearance between revolving upper work and car body.

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featuring simple design and low initial cost. It is recommended for road maintenance work, out-of-the-way locations, and other small jobs where portability and fast set-up are important. Principle of operation is fully described.—IOWA MFG. CO., CEDAR RAPIDS, IOWA.

Gratings and Treads—Complete line of gratings, metal treads, and specially designed fastening devices are listed in this 24-p catalog. The catalog contains a complete listing of dimensions for each product in the Gary line. It also contains a table of safe loads for various sizes of bearing bars. Each type of fastening device is illustrated, showing its features of installation. Text describes the recommended uses of each. The book is replete with photographs of actual Gary installations. —STANDARD STEEL SPRING CO., 2601 E. 5TH AVE., GARY, IND.

Concrete Form Construction—Full construction details for building forms using the Symons Forming System are listed in new bulletin. Specific information and tables provide complete, pertinent information on concrete pressure and what causes heavy pressure in concrete. The use of panel ties and walers is explained in relation to concrete pressure. Actual construction of panel forms is shown through detailed drawings of 2x8, 2x6, and 2x4 panels, inside and outside corners, and a 2-in. filler. Suggested construction procedures make it easy to construct forms for any condition.—SYMONS CLAMP & MFG. CO., 4263 W. DIVERSEY AVE., CHICAGO 39, ILL.

Proportioning Oil Burner—Features of proportioning oil burner for process heating applications are listed in Catalog 410. These features include: Burner furnished complete, push-button ignition, automatic control of combustion, and temperature and flame safeguards. These burners are ideally suited for use with rotary sand and stone dryers.—HAUCK MFG. CO., 124 TENTH ST., BROOKLYN 15, N. Y.

Welding Catalogs—Bulletin EW-149 (16 pp) contains a listing of the complete Hobart line of welding electrodes. Data provide information on application, welding procedure, mechanical properties, and specifications for all units. Bulletin DM-853 is a 4-p illustrated folder listing and describing 15 features of gasoline engine-driven arc welders. The bulletin contains specifications for 10 different models, as well as specifications for various combinations of arc welders and power units.—HOBART BROS. CO., HOBART SQUARE, TROY, OHIO.

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ENGINEERING NEWS RECORD

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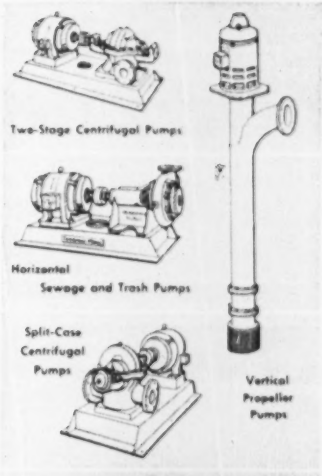

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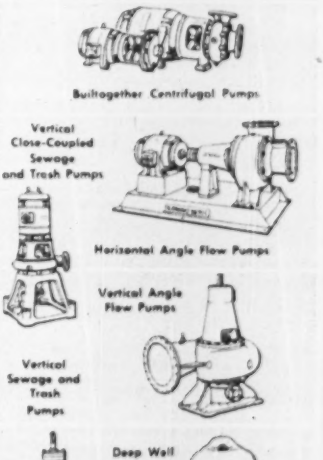
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PERSPECTIVE . . .

Pan-Am plays host

Fathered by the world's biggest commercial airline, there's a new private business group in operation that will spend about $100 million in the next six years to bring such comforts as ice-water, modern furniture and air conditioning to the world traveler. Planned or under way are 19 hotels that will ring South America and spread around the world.

The backer is Juan Terry Trippe's huge Pan American Airways. The builder (by a somewhat complicated chain) is a wholly-owned PAA subsidiary—Inter-continental Hotels Corp., of 41 East 42nd Street, New York City. The money has two sources: The Export-Import Bank, and local sponsors. IHC does the engineering, architecture, purchasing and operating.

Contracts already have been signed for construction of two: The 400-room, $6,400,000 Bochica Hotel in Bogota, Colombia, and the 400-room, $5,600,000 Tamanaco Hotel in Caracas, Venezuela. Bids will be opened April 30 for a third, the 150-room, $2,100,000 Del Lago Hotel at Maracaibo, also in Venezuela. Negotiations are complete for two more—at Santiago and Rio De Janiero.

• **Genesis**—IHC began with a gleam in the U. S. government's eye. Along in 1944, Washington planners foresaw that a means must be found to export U. S. dollars.

Most obvious way to get dollars abroad is through tourists. And most obvious agency was PAA—with its 150-plane fleet, its thousands of route-miles, shipping items (Grace Lines), its experience in out-of-the-way corners of the earth.

The idea coincided with a gleam long in Trippe's eye. Most hotels in foreign countries have been built and staffed by Europeans; their personal service standards are high, but their conveniences (ice-water, laundry service, comfortable furniture, good plumbing) are woefully low. The U. S. could teach a lot about comfort and business management. And good hotels could sell more air travel.

There were conferences, over nearly three years. Then a deal was struck: PAA to provide know-how and staff, U. S. to help finance.

• **Action**—Trippe did some heavy selling, and he talked tall, tough Wallace S. Whittaker out of retirement on his Virginia farm to take over IHC. Whittaker is a former top vice-president of General Motors, more recently a colonel who acted as chief supply-getter and trouble shooter for the U. S. 9th Air Force. A man who admits he knew little of the hotel business, he has a reputation for tenacity and for getting things organized and done. There's a story current that once, in quest of some "impossible" supplies for the 9th, he so upset Washington that in three days he not only had his supplies but the Pentagon's heartfelt wishes of godspeed back to England. Thereafter, he had only to request things—in a mild tone.

First move—in line with learning the business—was to take over and operate the relatively small (80-room) Grande hotel, at Belem, Brazil, and the 400-room Hotel Carrera, Santiago, Chile. Meanwhile IHC got into construction.

• **Business**—Here's how it works: IHC, with a capitalization of only $1,000,000, owns no hotels. It acts as agent, operator, consulting engineer.

So it inquires: Where do airlines (not alone PAA) go? Where are the big ports? Where are the railroad centers? Where is the manufacturing? Wherever these are, outside the U. S., hotels usually are needed.

Then, on the request of a local group, or on its own hunch, IHC sends in its crew—part of the four-man engineering section, (under Construction Engineer Thomas H. Smith) economists, hotel management experts. It makes a complete survey, considering, among other things, the local trade possible, prevailing architecture, climate.

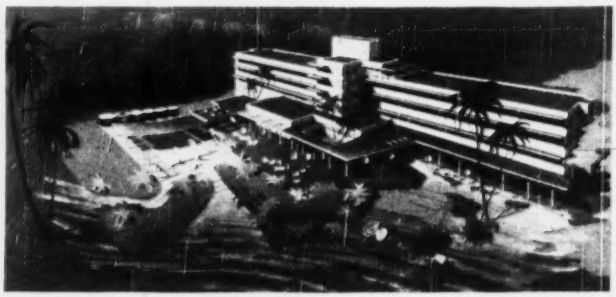
With this report, IHC talks to local businessmen. They form a corporation to own and finance the hotel (in part). As business representative, IHC negotiates with the Export-Import Bank for part of the funds, the local men to raise the rest locally. Their government usually protects them.

In its capacity as consulting engineer, IHC calls in its consulting architects (Holabird and Root and Burgee of Chicago), and lets contracts, buys, supervises. The building complete, IHC manages it.

Materials are purchased locally when possible. But much plumbing, steel and roofing materials will be bought in the United States. Contractors of any nation can and do bid on the construction. The Tamanaco at Caracas, for example, is under contract to a U. S. firm, American Pacific Industrial Corp., of New York and Puerto Rico; the Bochica at Bogota is under contract to Cuellar, Cerrano, Gomez y Cia. of Bogota. Local architects collaborate with consulting architects. Subcontractors are employed if needed.

Most buildings will be of reinforced concrete, utilizing extensive set-backs to provide light to all rooms, and blend with local architecture. All will provide either parking areas or garages.

IHC has either completed or is negotiating for the 600-room, $8,300,000 hotel at Rio De Janiero, Brazil; for a 400-room, $5,600,000 structure at Sao Paulo, Brazil; and for a 400-room, $6,500,000 hotel at Lima, Peru. Plans are under way for hotels at Lisbon, Madrid, and in Saudi Arabia; a $10,000,000 structure at Buenos Aires, Argentina; and others in South Africa, Tokyo, Italy and India.



REINFORCED CONCRETE, shaded terraces, setbacks, deluxe swimming pool and appointments are typical of the hotels now being built around the world. This is the 150-room De Lago Hotel at Maracaibo, Venezuela, up for bids April 30.

The MASTERPLATE "IRON-CLAD" CONCRETE FLOOR

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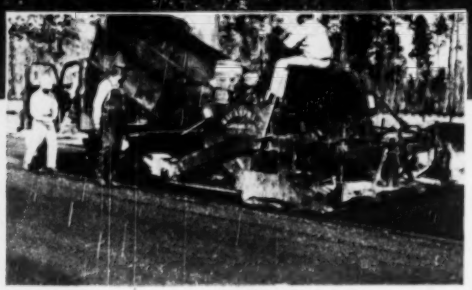
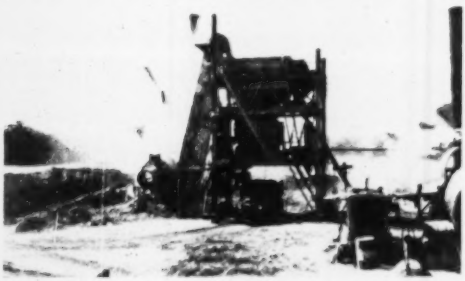
The kind of "welcome mat" Florida visitors will appreciate



Laying a dense-graded Texaco Asphaltic Concrete surface over old surface-treated limestone on 12½ miles of State Highway 55 (US 19) in Levy County, Fla.



Modern asphalt plant of the Macasphalt Corporation of Lakeland, Fla., which constructed the Texaco Asphaltic Concrete pavement on State Highway 55.

The "welcome-mat" Florida road builders are putting down for out-of-State motorists in the above photograph is 12½ miles long. It is the new Texaco Asphaltic Concrete surface recently laid over old surface-treated limestone on State Highway 55 along the Florida west coast. Here is the kind of "welcome mat" visitors to the State will appreciate and remember.

While the old oiled limestone highway was out-moded as a riding surface, it provided a well-consolidated foundation for a new top course. It was necessary first to level off the old road with a layer of coarse-graded Texaco Asphaltic Concrete. Then the wearing surface of dense-graded Texaco Asphaltic Concrete was laid to a compacted thickness of 1½ inches.

Hot-mixed, hot-laid Texaco Asphaltic Concrete of the type used on Florida Route 55, as well as the other varieties of Asphaltic Concrete, are described in the helpful booklet, "Texaco Asphalt Paving—Plant-mixed Types". You can secure a copy without obligation by writing our nearest office.

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REG. T. M.

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